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## Taming Unsustainable Finance : The Perils Of Modern Risk Management

Cullen, Jay

Cambridge University Press  
2019-11

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## 1. Introduction

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34&%\$4I"&' L. \*+%. ' +02\$' ' . -"+245) (2"K2&02"\$0+&L&+&. \*\*05' +&4, )+&' (" +5"0-&%\$+ . "02\$' ( . "\$4. "/&' \$' 0. 6J"  
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## 2. Finance as usual

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V\_4. . ' "%47. +\*5" 2\$L. " .H3. 4&. ' 0. 6"%34. \*\*&L. " (45K+2"&' "4. 0. ' + "I. \$4\*1"+2. " (4. . ' " , 5' 6"%47. +J"/54" . H\$%3-. J"2\$\*\* (45K' "/45%". // . 0+&L. -I"^ . 45"&\*\* )\$' 0. "&' "Z[ [F"+5"+5+\$-\$3345H&%\$+. -I"<Rj ! [ [ , &-&5' "&' " Z[! kJ"K&+2"+2. ">)453. \$' "<' &5' "Y><J]"\$' 6"; 2&' \$- . \$6&' (" +2. "K\$IMP"900546&' (" +5"+2. "G>; @J"+2. " (-5, \$- (4. . ' " , 5' 6"%47. + "%&(2+"4. \$02" <Rj k [ [ , &-&5' "&' "\$' ' )\$-\$&\*\* )\$' 0. "&' "/5)4"%47. +\*\* , I"Z[a["Y; 2&' \$J" 8\$3\$' J"+2. "><J"\$' 6"+2. "<R9]M"#2. "><"2\$\*\* , . . ' " . \*3. 0&\$--I"\$0+&L. "&' "345%5+&' (" +2. "6. L. -53%. ' + "5/" /&' \$' 0&\$- "%47. +\*\* "\$' 6"&' \*+4)% . ' +\*\* +5" . ' 05)4\$ ( . " (4. . ' " +. 02' 5-5 (&. \*M"#2. " ; \$3&+\$- B\$47. +\*\* "<' &5' " 3450. 0+"2\$\*\* 345L&6. 6"\$ 3-\$+/54%"/54"+2. "-. L. 4\$ (&' ("5/" ' . K"/&' \$' 0&\$- "&' \*+4)% . ' +\*J"&' 0-)6&' (" \$\*\* . +P , \$07. 6"\* . 0)4&&. \*\*Y9hrJ"e" "\$' 6" ' . K" (4. . ' "%54+ (\$ ( . "04&. 4&\$M"T' 6&0\$+&L. -IJ" (-5, \$-\$' ' )\$-\$&\*\* )\$' 0. "5/" (4. . ' "9hr"05)-6"4. \$02")3" +5" <Rj af [ [ , &-&5' "3. 4"\$' ' )% , I"Z[aeJ"/54"4. ' . K\$, -. " . ' . 4(IJ" . ' . 4(I" //&0&. ' 0I"\$' 6"-5K" . %&\*\*&5' "\$)+5%5, &. \*M"

: . +J"&' L. \*+% . ' +&' "4\$' \*&&5' "&' (" +5"\$-5K. 4P0\$4, 5' " . 05' 5%I"&' "-&' . "K&+2"&' +. 4' \$+&5' "\$-05%&+%. ' +\*\* 4. %\$&' \*\* +55"\*-5K"+5"\$L5&6"\$05' +&' )\$' 0. "5/" . " (\$+&L. " . // . 0+\*\*"/45% "\$' "\$+ . 4. 6" . ' L&45' % . ' +M">L. ' "+2. " ><"g"L&. K. 6"\$\*\*\$"-(-5, \$- . \$6. 4&' "+\$07-&' ("0-&%\$+ . "02\$' ( . "g"2\$\*\*05' 0. 6. 6"+2\$+&+&"" 5+"5' "+4\$07"+5% . . + &+\*4. Q)4. 6"!!!!MZ"+4&-&5' "Z[a[" . ' . 4(I"35-&0I"+\$4 ( . +\*M"#2. "0)44. ' + "\$' ' )\$-\$6. /&0&+&""\$3345H&%\$+. -I"! f [ [ , &-&5' J"54" I ! Mf"+4&-&5' " , . +K. . ' "Z[Z! "\$' 6"Z[a[M"B54. 5L. 4J"\$\*\*K. "\$4 ( . "&' "+2&\*"02\$3+. 4J"4. -I&' ("5" 34&L\$+. "%47. + "% . 02\$' &\*% \*\* +5"6. +. 4%&' . " . //&0&. ' + "0\$3&+\$-\$-50\$+&5' "L&\*PmPL&\*\*\* )\$+&\$' \$ , -. /&' \$' 0. J"/\$&-\*\* +5"/)--I"4. /-. 0+ +2. "4&\*7\*\* +2\$+)" \* )\$+&\$' \$ , -. "&' L. \*+% . ' +\*\* 35\* . M" c ) + "&%3-IJ"&' 4. -. (\$+ . \*\* +2. "45-. "5/" /&' \$' 0&\$- "%47. +\*\* "\$' 6"&' \*+&+)+&5' \*\* +5" +2\$+ 5/" \$' " . 3&+ . %&0" \*I\*+ . % 6. \*&' ( . 6" &%3-I" +5" /\$0&&+\$. " &' L. \*+% . ' +&' "+2. "%5\*+V. //&0&. ' +5"%\$' ' . 4"35\*\*&, -. M"#2&\*"0\$' " , . \*\* . ' "/45%"+2. "%\$' ' . 4"&' "K2&02"+2. " 0\$\* . "/54\* )\$+&\$' \$ , -. "&' L. \*+% . ' +&\*"5/+ . ' "%\$6. M" " %5\*+&' \*+&' 0. \*J"+2. "%47. + "0\$\* . "/54"&' L. \*+&' ("&' \* )\$+&\$' \$ , -. "L. ' +)4. \*\*&\*" %\$6. " , \$\* . 6")35' "+K5"L. 4I" ' \$445K"04&. 4&\$1"Y&]+2\$+ 354+/5-&5"05%34&\* . 6"5/" \* )\$+&\$' \$ , -. " , )\$&' . \*\* . \*\* ( . ' . 4\$-I"5//. 4\*\* )3. 4&54"Y54"\$+-. \$\*+"05%3\$4\$, -. ]"4. +)4' \*\* +5" +25\* . "05' +&\$&' &' ("

a"; -&%\$+. "h5' 6\*"I' &+&\$+&L. J"\_4. . ' "h5' 6\*"B\$47. +R)%%\$4I1"na"Z[! kJ" 0-&%\$+ . , 5' 6\*M . +o4. \*5)40. \*o4. 354+\*o(4. . ' P, 5' 6\*P%47. +P\*)%%\$4IPQaPZ[! kP[M"R. . "RM" c\$47"V\_4. . ' , 5' 6\*\*"\$' 6" , . 15' 61"6. , +/&' \$' 0&' ("\*\*\*")\$+&\$' \$ , &-&I"64&L. 4SJ; 2M"bZ"&' +2&\*"L5-)%. M b "\_Z[J]"\_4. . ' "N&' \$' 0. "RI' +2. \*&\*X. 354+J"e"R. 3+. %, . 4"Z[! \M" e">)453. \$' " ; 5%&&5' J" c4535\*\$-/54"\$X. ( )-\$+&5' "5/"#2. ">)453. \$' "c4-&\$% . ' + "\$' 6"5/"#2. " ; 5) ' 0&- "\$I&' ("65K' " 05%&5' "4)-. \*\*5' " . 0)4&+&+\$+&5' "\$' 6"04. \$+&' (">)453. \$' "/4\$%. K547"/54"\*&%3-. J"+4\$' \*3\$4. ' + "\$' 6\*\*+\$' 6\$46&\* . 6" \* . 0)4&+&+\$+&5' J"h4) \*\* . -\*J"a[M MZ[! e"; GBVZ[! e]"bkZ"/&' \$-\$Z[! eo[ZZ\Y; G@J" \ ">)453. \$' " ; 5%&&5' "\$' 6"@\_"; -&%\$+. "90+&5' J"R2&+&' ("c4&L\$+. "N&' \$' 0. "#5K\$46"; -&%\$+. PN4&. ' 6-I" T' L. \*+% . ' +\*J" B\$402"Z[! eM" k"G>; @J"\_4. . ' , 5' 6\*1"B5, &&\*&' (" +2. "6. , + "0\$3&+\$-\$%47. +\*\*/54"\$-5K"0\$4, 5' "+4\$' \*&+&5' J"@. 0. %, . 4"Z[! eM" f">)453. \$' " ; 5%&&5' J"R) \*\$&' \$ , -. /&' \$' 0. 1" ; 5%&&5' p"90+&5' "c-\$' "/54"\$ (4. . ' . 4"\$' 6"0-. \$' . 4" . 05' 5%IJ" h4) \*\* . -\*J"f"B\$402"Z[! fM"

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(556\*\*\$' 6"\* . 4L&0. \*M a" T" +4. -&. \*\*%5\*+I"5' "4. 354+&' (" \$' 6" +4\$' \*3\$4. ' 0I J" K2&02"05%34&\*. "7. I"3-\$' 7\*\*5/"  
%56. 4' 4&\*7"%\$' \$ ( . % . ' +\$' 6"&' L. \*+54" (5L. 4' \$' 0. M b" T" \$-\*\$5+\$0&+I "\$\*\*\*) % . \*\* +2\$+. ' L&45' % . ' +\$-"05\*+\*\*  
\$' 6" -&\$, &&+&. \*\*0\$' " , . "\$--50\$+. 6" \$%5' (\*+ "%\$47. +\$0+54J" , \$\* . 6" ) 35' " . H&\*+&' ( . ' L&45' % . ' +\$- -\$K\*J"  
34&L\$+. "05' +4\$0+\*J"\$' 6"05)4+0)6(% . ' +\*M

I/"K. "+\$7. "054354\$+. " (5L. 4' \$' 0. "\$\*\*\$' " . H\$%3-. 1\*\*\*)02"- \$K"\$' 6"4. ()-\$+&5' "&\*"+5"\$' " . H+. ' + , \$\* . 6"5' "  
4. -\$+&5' \*2&3\*\* , . +K. . ' " +2. " \* 2\$4. 25-6. 4\*\*\$\*\*&' L. \*+54\*\*\$' 6" +2. "/&4%"\$' 6" +2. "054354\$+. " , 5\$46"05--. 0+&' ("  
\$' 6"%\$' \$ (&' (" +2. \* . "&' L. \*+%. ' +\*\*/54"+2. "/&4%\$\*\* , . ' . /&+M T" +2. " . 4\$"5/"6&\*3. 4\* . 6"5K' . 4\*2&3I"%5\*+ +I3. \*\*  
5/" . Q) &+I "&' L. \*+54\*J"%\$4 (&' \$-+4\$6. 4\*\*\$' 6"&' \*+&+) +&5' \$-"&' L. \*+54\*\*\$4. "4. 34. \* . ' +. 6" , I"\$ (45) 3"5"/\$ ( . ' +\*\*  
+2\$+ " 0\$' " , . " 0\$--. 6" V%5' . I" %\$' \$ ( . 4\*SM e" X. \* . \$402" 6. %5' \*+4\$+. \*J" /54" . H\$%3-. J" +2\$+&' &' " %\$' I"  
0)4&\*6&0+&5' \*J&' 0-)6&' (">)453. \$' "%\$47. +\*J"/)' 6"%\$' \$ ( . 4\*\*05' +45-\$4 ( . \*\*K\$+2. \*\*5/" . Q) &+I "%\$47. +\*M T" "  
+2. "<A J"/)' 6"%\$' \$ ( . 4\*\*05' +45-"5L. 4"5' . P+2&46"5"/+2. "%\$47. +M " B\$' \$ ( . 4\*\*\$' 6" , 5\$46"% . % . . 4\*\*5"/&4%\*\*  
\$00546&' (-I" +4\$' \*\$0+K&+2-\$4 ( . -I"\$' 5' I%5) \*\* \* 2\$4. 25-6. 4\*J"4. 34. \* . ' +. 6" , I" +2. \* . "%5' . I" %\$' \$ ( . 4\*U"  
+2. \* . "%\$' \$ ( . 4\*\* , ) I"\$' 6\*\* . --\* . 0)4&+&. \*\*/4. Q) . ' +I J"/50)\*&' ("5' "Q) \$4+. 4-I"4. \*)+\*\*+57. . 3"%\$' \$ ( . % . ' +

~R. . "B54("\$R+\$' -. IJ"R)\*+\$&' \$, -. "X. \$-&+I" <' 6. 4\*+\$' 6&' (" +2. "c. 4/54%\$' 0. "5/"R)\*+\$&' \$, -. "I' L. \*+%. ' +"  
R+4\$+. (&. \*J" T' \*+&+) . "/54"R)\*+\$&' \$, -. "I' L. \*+&' (J" B\$402"Z[! eM  
!["#M VW2. -\$' "\$' 6"; MN&' 7"V#2. " ; 5%34. 2. ' \*&L. "h)\*&' . \*\*\*; \$\* . "/54"R)\*+\$&' \$, &&+I S"Y! ` f\]" J"  
Z!"G0+5, . 4"Z[! \J"2, 4M54(oZ[! \o! [o+2. P05%34. 2. ' \*&L. P, ) \*&' . \*\*P0\$\* . P/54P\*)\*+\$&' \$, &&+I M"  
!"8M X5, &' \*5' J"VRQ) \$4&' (" +2. "0&40-. q"R5%. "+25) (2+\*\*5' "+2. "&6. \$"5/"\*)\*+\$&' \$, -. "6. L. -53%. ' +S"YZ[ [b]"bF"  
J"a\`J"akbM  
!Z">M"? . ) %\$ I. 4J" "  
Y; 2. +. ' 2\$%1">6K\$46">-( \$4" c) , -&\*2&' (J"Z[ [a]M  
!a" cM>7&' \*J"RM R&%5' J"=M @. ) +\*02J"; MN5-7. "\$' 6"X M @. " \_455+J"V9"/4\$%. K547"/54"+2. "34\$0+&0\$-"\$33-&0\$+&5' "5"/+2. "  
05' 0. 3+\*\*5"/04&+&0\$-" \$+)4\$-"0\$3&+\$-\$' 6\*\*+45' (\*\*) \*+\$&' \$, &&+I S"YZ[ [a]"bb" J"! \eM  
!b"?M X55%. J"V=557&' ("h07J"#2&' 7&' ("N54K\$46I"@&\*+&' )&\*2&' ("h. +K. . ' "W. \$7"\$' 6"R+45' (R)\*+\$&' \$, &&+I S"&' cM  
h\$' \*\$-\$' 6"9MBM D5//%\$' "Y. 6\*M J" "YGH/546I"GH/546"  
<' &L. 4\*&+I "c4. \*\*J"Z[! ! ]M  
!e" DMcM B&' \*7I J"VB5' . I" B\$' \$ ( . 4"; \$3&+\$-&\*%S"Y! ` f` ]J"DI %\$' "cM B&' \*7I"9402&L. J" c\$3. 4"! aM  
!`I' L. \*+%. ' +9\*\*50&\$+&5' J"9\*\* . +B\$' \$ ( . % . ' +&' " +2. "<A"Z[! \P! KJ"R. 3+. %, . 4"Z[! kM

b"

"

\*2\$43"\$' 6". H. 4+&' ("34. \*\* )4. "5"7. . 3"+2. "05%3\$' &. \*\*05' 0. 4' . 6"(45K&' (M#2. "&' L. \*+%. ' +\*\*) 33-I"02\$&' \*\*  
\$4. "-5' ("'\$' 6"05%3-. HJ"K&+2"') (%. 45) \*\*&' +. 4%. 6&\$4&. \*\*\*+\$' 6&' (" . +K. . ' "+2. ") -+&%\$+. " . ' . /80&\$41"\$' 6"  
+2. "05%3\$' IJ"K&+2"&' L. \*+54\*\*K&-&' ("5"+4\$6. "5)+5/"\*. 0)4&+&. \*\*4\$3&6-I"\$' 6"&' "L5-)% . M' k"

#2. 4. "&""\*+45' (" . L&6. ' 0. "+2\$+" ' 5+K&+2\*+\$' 6&' (" +2. &4" 4. %5+. ' . \*\*\* /45%"&' L. \*+%. ' +6. 0&\*&5' \*J"%5\*+  
0\$3&+\$. - 345L&6. 4\*\* K5)-6" 34. / . 4" +2. &4" /)' 6\*\* ' 5"+5". H3-5&"+2. &4" / . --5K" 0&+&^ . ' \*\* 54"+2. " 3-\$' . +&' "\$' "  
)' \*) \*+\$&' \$, -. " K\$IM' f" : . +J" &' " %\$' I" 0\$\*. \*\* +2. \* . "&' L. \*+54\*\* \$4. " V540. 6" 0\$3&+\$. -&\*+\*SJ' ` " /54" &' \*+\$' 0. "  
. %3-5I. . \*\* , 5)' 6"+5"&' L. \*+245) (2"\$' " . %3-5I. 4P345L&6. 6" 3. ' \*&5' " 3-\$' M' N54"+2. " %\$054&I" 5/"\*) 02"  
&' L. \*+54\*J"+2. " % . 02\$' &\*%\*" \$L\$&\$, -. " . &+2. 4" /54" 6&L. \*+%. ' +54" L5&0. "\$4. " . H+4. % . -I" -&%&. 6M'I' " +2&\*"  
. ' L45' % . ' +J"&' L. \*+%. ' +\*\*\$4. "+2. %\* . -L. \*\*\*254+P\*&(2+. 6U"\$+25) (2\*\*5%. "&' \*+&)+&5' \$-"&' L. \*+54\*\*\*) 02"  
\$\*\*3. ' \*&5' /)' 6\*\* " 2\$L. "-5' ( . 4P+. 4%"&' L. \*+%. ' +254&5' \*\*Y\$+25) (2"+2&\*" 65. \*\*\* 5+"\$-K\$ I' \*\*34. L. ' +"  
4\$3&6"+)4' 5L. 4"5/" . Q)+I" 25-6&' (\*J"+2. &4"&' L. \*+%. ' +34. / . 4. ' 0. \*\*\$4. "05)' ' +. 4, \$-\$' 0. 6", I"\$4(. 4"%5' . I"  
%\$' \$(. 4\*\*\*) 02"\$\*\*%) +)\$"/)' 6\*J" K25\* . "&' L. \*+%. ' +3\$++ . 4' \*\*\$4. "%) 02"%54. \*\*254+P+. 4%MT' " +2. "<R9"  
/54". H\$%3-. J"+2. \*\*2\$4. 25-6. 4", \$\*. "5"/3) , -&05%3\$' &. \*\*)+4' . 6"5L. 4"\$-%5\*+"05%3-. +. -I"5' "\$' "\$' ' )\$-"  
, \$\*&\*&' "+2. " . \$4-I" Z[! [ \*M' L' T' \*+&)+&5' \$-"&' L. \*+54\*\*g"+2. "-\$4(. "%\$054&+I" 5/"K25%" . ' (\$ ( . "&' \*\*254+P+. 4%"  
+4\$6&' ("Y6. /&' . 6"\$\*\* 25-6&' (" 3. 4&56\*\* 5/"-. \*\*\*+2\$' "5' . " I. \$4]"g" 05--. 0+&L. -I" 2. -6" e[ M\$ 3. 4"0. ' +5"/+2. "  
5)+\*+\$' 6&' (\*2\$4. \*\*&' "<R"-&+ . 6"05%3\$' &. \*\*&' Z[! eU' Z[! "&' Z[! ZJ"+2. I" 2. -6"\$, 5)+k[" 3. 4"0. ' +5"/L\$-). "5/"  
+2. "<R\*\*+507"%\$47. +\*M' Z" 9"+2. \*\*\$%. "+&% . J, -50725-6&' (\*\*2\$L. "&' 04. \$\*. 61"+2. "3. 40. ' +\$(. "5/"\$--<R"-&+ . 6"  
/4%\*\*K&+2"\$+-. \$\*+"5' . "&' \*+&)+&5' \$-"\*2\$4. 25-6. 4"5K' &' (! [" 3. 4"0. ' +54"%54. "5"/+2. \*\*2\$4. \*\*K\$\*\*!! M' "  
3. 4"0. ' +&' " ! f[U' ! `Me" 3. 4"0. ' +&' " ! ` eU'\$' 6"aZ" 3. 4"0. ' +&' " Z[! eM' a"

@). "+5+2. \* . "6. L. -53%. ' +\*J"&' L. \*+54\*\*K&+02" 3-\$' \*\*%) 02"%54. " /4. Q). ' +IJ" &' +456) 0&' ("\*), \*+\$' +&\$-"  
L5-\$+&+IJ" K2&02"/540. \*\*\$\*\* . +"%\$' \$(. 4\*\*+5"05%3. +. "/54"/)' 6\*\* , \$\*. 6"5' "254+P+. 4%" 3. 4/54\$ \$' 0. MT+&\*" "  
+2. 4. /54. ")' \*) 434&\*&' ("2\$++2. "\$L. 4\$ ( . "25-6&' (" 3. 4&56"/54"&' \*+&)+&5' \$-"&' L. \*+54\*\*&\*" L. 4I" 254+U"&' "+2. "

!k"G>; @J" J"Yc\$4&\*I"G>; @c), -&\*2&' (J"Z[! e]J"3M'Z" M"  
!f"9\*\* )4L. I"5"/KJ[[[" 4. \*35' 6. ' +\*\*&' "ZZ"05)' +4&. \*\*, I"?\$+&H&"" -5, "\$9\*\* . +B\$' \$ ( . % . ' +&' "Z[! k'/5)' 6"+2\$+\*\*50&\$-"  
\$' 6". ' L45' % . ' +\$-"5, 0. 0+&L. \*\*\$4. "\$' "&%354+\$' +"/\$0+54"/54"\$45)' 6"k[r" 5"/4. +\$&"&' L. \*+54\*J"4. / . 44. 6"+5"&' "><"  
D&(2P=. L. -" \_45) 3"5" "R)"\*+\$&' \$, -. "N&' \$' 0. J"N&' \$' 0&' ("\$(R)"\*+\$&' \$, -. ">) 453. \$' ">05' 5%I1"N&' \$"X. 354+J"8\$' ) \$4I"  
Z[! fJ"3M'Zk"/' M'! ZM'  
!'"=M>M'R+4&' . J"84M'V#5K\$46"; 5%%5' "R. ' \* . "\$' 6"; 5%%5' " \_45)' 6q"X. /-. 0+&5' \*\*5' "+2. "R2\$4. 6T' +. 4. \*+\*\*5/"  
B\$' \$ ( . 4\*\*\$' 6"=\$, 54&' "9"B54. "X\$+&5' \$-"R I' +. %5"/; 54354\$+. " \_5L. 4' \$' 0. \$YZ[[k]"aa"  
J"! J"bM'  
Z["=M>M'R+4&' . J"84M'VG' . "N)' 6\$%. ' +\$-; 54354\$+. " \_5L. 4' \$' 0. "n). \*+&5' "W. "N\$0. 1"; \$' "; 54354\$+&5' \*h. "B\$' \$ ( . 6"  
/54"+2. "=5' ("#. 4%"<' -. \*\*\*#2. &4"c5K. 4/)->-. 0+54\$+. \*\*9-5"90+\$' 6"#2&' 7"=5' ("#. 4%q\$YZ[! !]"\\ "  
J"! J"! kM'  
Z!"AMBMA\$2-. "\$' 6"XMBMR+)-^J"V\*\*+2. "<R"c), -&0; 54354\$+&5' "&' "#45), -. q\$YZ[! k]"a!"  
J"\\kJ"f! M'  
ZZ" Bm>Mh-) % . "\$' 6"@MhMA. &%J"V' \*+&)+&5' \$-"T' L. \*+54\*\*\$' 6"R+507"B\$47. +=&Q) &6&+I1"#4. ' 6\*\*\$' 6"X. -\$+&5' \*2&3\*J"  
W547&' ("c\$3. 4J"W2\$4+5' "R0255-J"<' &L. 4\*&+I"5"/c. ' ' \*I-L\$' &\$Y9) (M'Z! J"Z[! Z]J"@M'B&-5' J"VR2\$4. 25-6. 4"R50&\$-"  
X. \*35' \*&, &-&+I"\$YZ[! a]"a\\ J" ` !! J" ` ! aM'  
Za"A\$2-. "\$' 6"R+)-^J"V\*\*+2. "<R"c), -&0; 54354\$+&5' "&' "#45), -. qSJ"f! M'

<' &#x2D; 6"R+\$+. \*"&#x2D;"\$"% . 4. " . &#x2D;2+"%5' +2\*ZbJ"K2&#x2D;+"\$L. 4\$ ( . " Q)&#x2D;I"354+/5-&#x2D;5")4' 5L. 4"\$%5' (\*+'&#x2D; L. \*+54\*\*&#x2D;'>)453. "\$' 6"+2. "<R9"&#x2D;"\e"3. 4'0. ' +2&#x2D;(2. 4'+2\$' " . H3. 0+. 6"- . L. -\*MZe"#2. "%\$47. +34. \*\*)4. \*\*4. \*)-&#x2D;' (" /45%"&#x2D;' +&#x2D;)+&#x2D;5' \*J\*\*254+P+. 4%"&#x2D;&#x2D;. "254&#x2D;5' "\$' 6"/&#x2D;6)0&#x2D;\$4I"5, -&#x2D;(\$+&#x2D;5' \*JZ^"\$' 6"(4. \$+. 4"0\$3\$0&#x2D;I"+5. ' /540. " %54. " \*2\$4. 25-6. 4P0. ' +&#x2D;4&#x2D;0 054354\$+. " %\$' \$ ( . % . ' +J" 2\$\*\* - . 6" B&#x2D;-5' " +5" 6&#x2D;\*&#x2D;' )&#x2D;\*&#x2D;2" , . +K. . ' " +2. " V+4\$6&#x2D;+&#x2D;5' \$-S\*\*2\$4. 25-6. 4"34&#x2D;%\$0I"%56. -J"34. \* . 4L&#x2D;' ("2&#x2D;(2"6. (4. . "5"/, 5\$46"6&#x2D;\*04. +&#x2D;5' "+5"/50)\*\*5' "+2. " -5' (P+. 4%"\$' 6"+5+. %3. 4"345/&#x2D;"%\$H&#x2D;%&#x2D;\*&#x2D;+&#x2D;5' J"\$' 6"\$V4\$6&#x2D;0\$-S\*\*2\$4. 25-6. 4"34&#x2D;%\$0I"%56. -/50)\*&#x2D;' ("5' " Q)\$4+. 4-I' . \$4' &#x2D;' (\*" \$' 6' \*+I-&#x2D;' (" +2. " , 5\$46"\$\*\*\$' "V\$( . ' +S" 5"/+2. " "Y. 05' 5%&#x2D;0\$--IJ" &#x2D;' " 5+&#x2D; . (\$--I)M^k"

T' "+2. "05' +. H+"5"/0-&#x2D;%\$+. "02\$' ( . J"B\$47"; \$4' . I"02\$4\$0+. 4&#x2D; . \*\*\*)02"05' /-&#x2D;0&#x2D;' ("&#x2D;' +. 4. \*+\*\*\$\*\*"+2. "V+4\$( . 6I" 5"/+2. "254&#x2D;5' SJZ^f"+2. "4&#x2D;7\*\*"/45%"K2&#x2D;02"V/\$-- , . I5' 6"+2. "+4\$6&#x2D;+&#x2D;5' \$-"254&#x2D;5' \*\*5"/%5\*+"\$0+54"g"&#x2D;'35\*&#x2D;' (" "\$05\*+"5' "/)+4. " ( . ' . 4\$+&#x2D;5' \*\*"+2\$+"+2. "0)44. ' +(" . ' . 4\$+&#x2D;5' "2\$\*\*" 5"6&#x2D;4. 0+&#x2D;' 0. ' +&#x2D;L. " +5"/&#x2D;HMS^Z"#2. "4&#x2D; . "5/" 3\$\*\*&#x2D;L. "&#x2D;' 6. H"&#x2D;' L. \*+&#x2D;' (" +24. \$+. ' \*\*"+5"/)4+2. 4)"' 6. 4%&#x2D;' . "+2&#x2D;"&#x2D;' L. \*+%. ' +"%56. -I"K2. ' "0\$3&#x2D;+-\$"345L&#x2D;6. 4\*\*&#x2D;' &#x2D;' L. \*+&#x2D;' +2. " . ' +&#x2D;4. " Q)&#x2D;I"%\$47. +J"54"\$\*\*), \* . 0+&#x2D;5' "5"/&#x2D;+Y. &#x2D;+2. 4"+245) (2". H02\$' ( . P+4\$6. 6"/)' 6\*\*54&#x2D;' 6. H" +4\$07. 4\*]J"4. +)4' P02\$\*&#x2D;' (" 5L. 4"+2. " \*254+P+. 4%"&#x2D;"&#x2D;-&#x2D;7. -I"+5"- . \$6"+5" %5' 5P6&#x2D;% . ' \*&#x2D;5' \$-&#x2D;I" &#x2D;' " 354+/5-&#x2D;5" \$--50\$+&#x2D;5' J"K&#x2D;+2"%5' . I"%\$' \$ ( . 4\*\*\$--50\$+&#x2D;' ("0\$3&#x2D;+-\$"+5"054354\$+&#x2D;5' \*\*"+2\$+"5//. 4"-&#x2D;7. -I"\*)3. 4&#x2D;54\*\*254+P +. 4%"4. +)4' \*M^f"#2. \* . "/\$0+54\*\*"5L. 4K2. -"%05' \*&#x2D;6. 4\$+&#x2D;5' \*\*5"/)\*\* \*+&#x2D;' \$, &#x2D;+I" , . 0\$)\* . "%5' . I"%\$' \$ ( . 4\*\* %\$I" 05%. " +5" 6&#x2D;4. (\$46" . ' L&#x2D;45' %. ' +\$-J" \*50&#x2D;-\$" \$' 6" (5L. 4' \$' 0. " Y>R\_]'" &#x2D;' L. \*+%. ' + " 34&#x2D;' 0&#x2D;3-. \*M N54" . H\$%3-. J"\$\*\*5"/Z[! \J"- . \*\*"+2\$' "5' . "3. 4'0. ' +5"/+2. "0\$3&#x2D;+-\$"5"/+2. "/&#x2D;+ . . ' "-\$4 ( . \*+<R"3. ' \*&#x2D;5' "/)' 6\*\*&#x2D;" 6. L5+. 6" +5" >R\_P\*3. 0&#x2D;/0" &#x2D;' L. \*+%. ' +J" 6. \*3&#x2D;+ . . \$02" , . &#x2D;' (" \*&#x2D;' (\$+54&#x2D;. \*\*"+5" +2. " <?" c4&#x2D;' 0&#x2D;3-. \*\* /54" X. \*35' \*&#x2D; . - . T' L. \*+%. ' +J" \$' 6" Y\*)335\*. 6-I]" &#x2D;' +. 4. \*+. 6" &#x2D;' " -5' (P+. 4%" 3. 4/54%"\$' 0. M^f" " T' " \*)02" 0&#x2D;40)%\*+\$' 0. \*J"+2. " +55-\*"5/" K. \$7"\*) \*+&#x2D;' \$, &#x2D;+I" g" 6&#x2D;0-5\*)4. J"+4\$' \*3\$4. ' 0I"\$' 6"+2. " -&#x2D;7. "g" , . 05%. " -\$4 ( . -I"4. 6)' 6\$' +M"

Zb\*\*BMW/MX5, . 4 ( . J"8M; M^N-\$2. 4+IJ"84M^XMBM^9-%. &#x2D;6\$J"84M'\$' 6"9M; Mh5I6J^V=-. ' (+2. ' &#x2D;' (+2. "T' L. \*+%. ' +"#&#x2D;% . " D54&#x2D;^5' SJ^BNR^W2&#x2D;+ . "c\$3. 4"R. 4&#x2D; . J"8)-I"Z[! kM Z^e^TXX; "T' \*+&#x2D;+). "\$' 6"B. 40. 4J^VT' L. \*+%. ' +D54&#x2D;^5' \*S^YZ[! eJ]" &#x2D;440&#x2D;' +&#x2D;+). M54(oK305' +. ' +o)3-5\$6\*oZ[! eo[ ^oTXX; B. 40. 4I' L. \*+%. ' +D54&#x2D;^5' \*X. 354+sN. , Z[! [! M36/M^ Z^N54"&#x2D;' \*+\$' 0. J"/54"3. ' \*&#x2D;5' "/)' 6\*^ . . 6"5"/0\$\*2"+5\*\*\$+&#x2D;' /"+2. "25-6. 4\*\*5"/6. /&#x2D;' 6"3. ' \*&#x2D;5' "3-\$" \*\*\$' 6"/&#x2D;6)0&#x2D;\$4I" 5, -&#x2D;(\$+&#x2D;5' \*\*"+5" +2. %J\*\* . . "B&#x2D;-5' J^VR2\$4. 25-6. 4"R50&#x2D;\$"X. \*35' \*&#x2D;, &#x2D;+I SJ^`a[P! J^`afP^M Zk^; M^BMh4)' . 4J^V; . ' +. 4P=. /+c5-&#x2D;+0\*\*\$' 6"; 54354\$+. " \_5L. 4' \$' 0. I"V2\$+T\*\*"+2. "pc45(4. \*\*&#x2D;L. p^9 ( . ' 6\$qS^YZ[! f]" "Z^kM"

Z^f^BM; \$4' . IJ^Vh4. \$7&#x2D;' (+2. "#4\$ ( . 6I"5"/+2. "D54&#x2D;^5' "g"; -&#x2D;%\$+. " ; 2\$' ( . "\$' 6"N&#x2D;' \$' 0&#x2D;\$-R+\$, &#x2D;+I SJ^\*3. . 02"\$+="-5I6S\*\* 5"/=5' 65' J^Z^ "R. 3+. %, . 4"Z[! eM Z^"; \$4' . IJ^Vh4. \$7&#x2D;' (+2. "#4\$ ( . 6I SJ^aM a[!^#2. "4&#x2D; . "5"/3\$\*\*&#x2D;L. "&#x2D;' L. \*+&#x2D;' ("%I" , . "5L. 4\*+\$+. 6M^900546&#x2D;' (" +5"h-07X507J"+2. "K54-6S\*\*-\$4 ( . \*+3\$\*\*&#x2D;L. "/)' 6" %\$' \$ ( . 4J"\$\*\*5"/Z[! kJ"- . \*\*"+2\$' "I f"3. 40. ' +5"/(-5. \$-\*\*+507\*\*K. 4. "5K' . 6" , I"3\$\*\*&#x2D;L. "&#x2D;' L. \*+54\*M^900546&#x2D;' (" +5" +2. " 6\$+J"+2. 4. "\$4. "j ZZ"65--\$4\*\*+4\$6. 6" , I"\$0+&#x2D;L. \*\*"+5073&#x2D;07. 4\*\*"/54". L. 4I"j !"+4\$6. 6" , I"&#x2D;' 6. H"/)' 6\*\*MR. . "h-07X507J" T' 6. HT' L. \*+&#x2D;' ("R)3354+\*d&#x2D;, 4\$+"; \$3&#x2D;+-\$"B\$47. +J^G0+5, . 4"Z[! kM a[!^8Mh&#x2D;+&#x2D; . IJ^hM^A- . %3' . 4"\$' 6"8Mt5//. 4J^VR)\*+&#x2D;' &#x2D;' ("R)\*+&#x2D;' \$, &#x2D;+I W2\$+T' \*+&#x2D;)+&#x2D;5' \$-T' L. \*+54\*\*R25)-6"@5"? . H+5' " >R\_]B0A&#x2D;' . I"u"; 5%3\$' I^YZ[! \J]"\$L&#x2D;\$, - . "\$+I"%07&#x2D;' \* . I MD5%o&#x2D;' 6) \*+4&#x2D; . \*o34&#x2D;L\$+. P. Q)&#x2D;+I P\$' 6P34&#x2D;' 0&#x2D;3\$-P &#x2D;' L. \*+54\*o5)4P&#x2D;' &#x2D;(2+\*o\*) \*+&#x2D;' &#x2D;' (P\*) \*+&#x2D;' \$, &#x2D;+I PK2\$+P&#x2D;' \*+&#x2D;)+&#x2D;5' \$-P&#x2D;' L. \*+54\*P\*25)-6P65P' . H+P5' P. \*(M"

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### 3. The financial system as an agent of change

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9\*\*K. "2\$L. "6&\*0)\*\*. 6J"+2. "/&' \$' 0&\$-\*I\*+. %"%\$I", . "L&. K. 6"\$\*\*'\$ "\$((4. (\$+&5' "5/"%5' . I"%\$' \$(. 4\*\*  
&' L. \*+&' ("5' " , . 2\$-/"5"/+2. &4"34&' 0&3\$-\*M#2. \* . "0\$3&+-\$-345L&6. 4\*\*\$4. "\$\*\*)% . 6"+5"2\$L. "+2. "0\$3\$0&+I"+5"  
6. -. (\$+. "+2. &4"0\$3&+-\$-5"+25\*. "%\$' \$(. 4\*\*K25", . \*+%"\$+02"+2. &4"34. /. 4. ' 0. \*MR2\$4. 25-6. 4\*\*0\$' &' L. \*+ "  
&' /&4%\*\* , . \*+%"\$+02&' ("2. &4"5K' "34. /. 4. ' 0. \*\*/54\*\* . 0+54J"\$0+&L+IJ'\$' 6"4&\*7U"/)' 6" , . ' . /&0&\$4&. \*\*0\$' "  
0255\* . "+5"&' L. \*+&' &' L. \*+%. ' +/)' 6\*\*\$00546&' ("5"+2. "(5\$-\*'\$' 6"4&\*7"\$33. +&+. \*\*5"/+2. "/)' 6\*\*&' "  
Q). \*+&5' U'\$' 6\*\*5"5' M#2. "45-. "5/"-\$K&' "+2. \* . &' \*+5' 0. \*\*&"+5"345L&6. "4)-. \*\*\$' 6"(5L. 4' '\$' 0. " 54%\*\*"+5"  
4. ()-\$+. "+2. "\$(. ' 0I"4. -\$+&5' \*2&3J"02&. /-I"+5"34. L. ' "+2. "&' +. 4. \*+5"/%"\$' \$(. 4\*\*/45%"05' /-&0&' ("K&+2"  
+25\* . "5"/345L&6. 4\*J" , )+"\$-5"+5. ' \*)4. "+2\$++2. "6. 0&\*&5' \*\*5"/+25\* . "%\$' \$(. 4\*\*\$4. \*\*)//&0&. ' +I"  
+4\$' \*3\$4. ' +J"+2. "&' /54%\$+&5' "345L&6. 4\*\*4. 0. &L. "&\*05445, 54\$+. 6J'\$' 6"345L&6. 4\*\*\$4. "(&L. ' \*\*)//&0&. ' + "  
53354+)' &&. \*\*"+5"%5L. "+2. &4"&' L. \*+%. ' +\*\*&"+2. I\*\*5"K&\*2M"W&+2"\$"/. K" 5+\$, -. " . H0. 3+&5' \*\*"+5", . "  
6&\*0)\*\*. 6"/)4+2. 4" , . -5KJ")02-. (&\*-+\$+&L. "4. Q)&. %. ' +\*\*\$' 6"4. ()-\$+54I"())&6\$' 0. "\$4. \*\*I%3+5%\$+&0"5/"  
+2. "\$3345\$02+\$7. ' "+5"\$--&' L. \*+%. ' +4&\*7M

R)02"&' /54%\$+&5' " . H02\$' (. "/54%\*\*"+2. 54. +&0\$-"/5)' 6\$+&5' "5"/. //&0&. ' +%"\$47. +"+2. 54I"Y>B#]Jj^Z"K2&02"  
)' 6. 43&' \*\*%)02"/&' \$' 0&\$-"%\$47. +4. ()-\$+&5' "\$' 6J"%54. \*\*&(' &/&0\$' +IJ"\*2\$4. 25-6. 4"L\$-). "+2. 54IM'9" "  
&%354+\$' +. -. %. ' +5"/>B#&\*&+2. "4\$+&5' '\$-&' L. \*+54"%56. -J"K2&02"35\*&+2\$+"345L&6. 6"/)-"&' /54%\$+&5' "  
&\*6&\*0-5\*. 6J"+2. "34. 6&0+&5' \*\*5"/"\$(. ' +\*\*K&-", . "0544. 0+5' "\$L. 4\$(. "5L. 4"+&% . M'900546&' ("5">B#"\$' 6"  
4\$+&5' '\$-&' L. \*+54"%56. -\*J"-\$+25) (2"+2. " /)+4. " &\*" ' 5+ /)-I" 34. 6&0+\$, -. J" \$(. ' +\*\$" . H3. 0+\$+&5' \*\* \$4. "  
\$\*\*)% . 6" . &+2. 4"+5", . \*\*I\*+. %\$+&0\$--I", &\$\* . 6" 54"+5-. \$6"+5"05--. 0+&L. " . 4454\*J"K&+2"\$' I"6. L&\$+&5' \*\*/45% "  
+2&\* Y3. 4/. 0+ /54. \*&(2+J" 4. (\$46. 6" \$\*\* 4\$' 65%M'9\*\* "\$ 4. \*)+J" 4\$+&5' '\$- . H3. 0+\$+&5' \*\* 65" ' 5+ 6&/ . 4"  
\*I\*+. %\$+&0\$--I"54"34. 6&0+\$, -I"/45% . Q)&&, 4&)%4. \*)+M'9, \*54, &' ("2&\*&' /54%\$+&5' "4. \*)+\*\*&' "\$34&0. "  
+2\$+"&' "+2. 54I" 345L&6. \*\*' 5+"5' -I"\$' 5, 0. 0+&L. " VL\$-). S" , )+"\$-5\$' "\$&%354+\$' +"/5)' 6\$+&5' " /54" 4&\*7"  
%\$' \$(. %. ' +"\$' 6\*\*+4\$+. (IM^a"9\*\*>)(. ' . "N\$%"\$2\$\*\*"/\$%5)\*-I" 5+. 6J"\$04&+&0\$-4. Q)&. %. ' +"/54"+2&\*"34&0. "  
/54%\$+&5' "&"+2\$+"\$--V&%354+\$' +0)44. ' +&' /54%\$+&5' "&""-\$%5\*+/4. . -I"\$L&\$, -. "+5"\$--3\$4+&0&3\$' +\*SM^b"b"b)+ "  
K2\$+"65. \*\*+2&\*"%. \$' &' "+2. "05' +. H+5"//&' \$' 0&\$-"%\$47. +4. ()-\$+&5' q"

\_\_\_\_\_ "

aZ" cMR\$%) . -5' Jvc455/" +2\$+c453. 4-I"9' +&0&3\$+. 6"c4&0. \*\*N-)0+)\$+. "X\$' 65%-I\$YI` \eJ"\ "

J b! M'

aa"NMDM">\$\*+. 4, 4557"\$' 6'@MXM'N&\*02. -J"

"Y; \$%, 4&6(. 1"D\$4L\$46"<' &L. 4\*&+I"

c4. \*\*J"!`!`!M'

ab">MM'N\$%\$J"VX\$' 65%"W\$-7\*\*&' "R+507"B\$47. +c4&0. \*\$YI` \eJ"Z!"

J"eeJ"e\ M'

"

k"



#2. "-5(80\$-4. \*35' \*. "345//. 4. 6"5+5"6. %\$' 6". L. 4P28(2. 4". L. - "5/"68\*0-5\*)4. "\$' 6"8' 04. \$\*. 6"8' /54%\$+85' "/-5K\*\*+58' L. \*+54\*MT' "+2. "05' +. H+5"/(4. . ' /8' \$' 0. J+5", . \*\*\*)4. J\*\*0\$-8' ("3\*\*)02"%\$47. +\*\*4. Q)8. \*\*"\$%54. " +4\$' \*3\$4. ' +"\$' 6"8' /54%\$+85' P4802"%\$47. +MT' L. \*+54\*J"/54". H\$%3-. J%) \*+"2\$L. \*\*)//808. ' +8' /54%\$+85' "+5" 0)6(."K2. +2. 4"54" ' 5+"\$3\$4+80)-\$4"8' L. \*+%. ' +\*\*\$+8'/8. \*\*"\$\*3. 08/80"6. /8' 8+85' "5"/V(4. . ' ' . \*\*SU"+2. 4. "\$4. " 345, -. %\*\*K8+2"+2. "3450. \*\*"5"/86. ' +8/18' ("K2802"\$\*\* . +\*\*%8(2+", . "0)\*+8/8\$, -1"0\$+. (548\*. 6"\$\*\*V(4. . ' S"/54" \*\$-. "\$\*\* , 5' 6\*\*54"5+2. 4"/8' \$' 08\$-8' \*+4)% . ' +\*MPe" T' L. \*+54\*\*' . . 6"8' /54%\$+85' "+5"\$6. Q)\$+. -1"\$\*\* . \*\*"+2. " \*)8+8, 88+1"5"/3\$4+80)-\$4"8' L. \*+%. ' +\*\*\$' 6"+2. "-\$07"5"/) ' 8/54%8+1"8' 8' +. 4' \$+85' \$- \*\*+\$' 6\$46P\*. +8' ("%"\$1" \$0+\$\*\*"\$ , 4\$7. "5' "/)4+2. 4"6. L. -53%. ' +5"/+2. "%\$47. +M"

R5"4. ()-.\$+54\*\* 6. %\$' 6"+2\$+"054354\$+85' \*\*'\$ 6"/8' \$' 08\$-8' \*+8+)+85' \*\*4. 6)0. "\$\*1%%. +48. \*\* , 1"%\$78' (" 68\*0-5\*)4. \*\*"\$ , 5)+"+2. 84"0-8%\$+. . H35\*)4. \*J"+4)\*+8' (" +2. "%\$47. +"+5"65"+2. "4. \*+M G' " +28\*\* , \$\*8J"+2. " R. 0)488. \*\*"\$' 6">H02\$' (. ; 5%%8\*\*85' "8' "+2. "<R9"2\$\*\*8\*\*). 6")86\$' 0. "\$\*\*+5"+2. "\$33-80\$+85' "5"/. H8\*+8' (" 68\*0-5\*)4. "4. Q)84. %. ' +\*\*8' "4. -\$+85' "+5"0-8%\$+. "02\$' (. MP" T' "+2. "<AJ"%\$' 1"05%3\$' 8. \*\*\$4. "4. Q)84. 6"+5" 68\*0-5\*. "0. 4+88' " ' 5' P/8' \$' 08\$-8' /54%\$+85' J"5/+. ' "4. -\$+8' (" +5"+2. "8%3\$0+"5"/054354\$+. "\$0+8L8+8. \*\*5' "+2. " . ' L845' %. ' +"\$' 6"+2. "48\*7\*\*". ' L845' %. ' +\$-"02\$' (. "%\$1"35\*. "+5"+2. "4. -. L\$' +"05%3\$' 1MPk"#28\*\*K547"2\$\*\* , . . ' " , )++4. \*\* . 6" , 1"+2. "N8' \$' 08\$-R+\$ , 88+1"h5\$46"#\*\$7PN540. "5' " ; -8%\$+. PX. -\$+. 6"N8' \$' 08\$-8\*0-5\*)4. \*\* Y#; N8JMP" T' "+2. " "><J" +2. " ?5' P/8' \$' 08\$- X. 354+8' (" @84. 0+8L. " 4. Q)84. \*\* 68\*0-5\*)4. " 4. -\$+8' (" +5" \*\* \$" V%8' 8%)%J". ' L845' %. ' +\$-J"\*508\$-\$' 6". %3-51. . "%\$++ . 4\*J"4. \*3. 0+"/54"2)%\$' "48(2+\*J"\$' +8P0544)3+85' " '\$' 6" , 48 , 41"%\$++ . 4\*Ma`"B54. "05' 04. +. -1J"+2. "><\*"B\$402"Z[! f"90+85' "c-\$' "5' \*\*)\*+88' \$ , -. "/8' \$' 0. "\$' 6" +2. "/84\*+><"; 5%%8\*\*85' "34535\*\$-\*\*. ' L8\*\$' (. "\$') ' 8/8. 6"><0-\$\*\*8/80\$+85' \*\*1\*+. %5"/\*\*)\*+88' \$ , -. " . 05' 5%80" \$0+8L8+8. \*\* '\$' 6" (4. . ' " /8' \$' 08\$- 3456)0+\*U" 8%345L. 6" 68\*0-5\*)4. " 4. Q)84. %. ' +\*\* 5' " 25K" 8' \*+8+)+85' \$- 8' L. \*+54\*\*8' +. (4\$+. ">R\_"/\$0+54\*\*8' "+2. 84"48\*7"3450. \*\*. \*U'\$' 6"\$" ' . K"0\$+. (541"5"/ , . ' 02%\$47\*\*+5"2. -3" 8' L. \*+54\*\*05%3\$4. "+2. "0\$4 , 5' "/55+348' +5"/+2. 84"8' L. \*+%. ' +\*MP[ "9"0)4\*541"4. L8. K"5"/. \$02"4. L. \$- \*\*"+2. " 8%354+\$' 0. "3-\$0. 6"5' "+2. "68\*0-5\*)4. "\$' 6"+4\$' \*3\$4. ' 01"3\$4\$68(%\*M

ae" #M">2-. 4\*\*'\$' 6"NM c\$07. 4J"V\_4. . ' "h5' 6\*\*g"0. 4+8/80\$+85' J"\*2\$6. \*\*5"/(4. . ' "\$' 6". ' L845' %. ' +\$-48\*7\*SJ" h\$' 7"/54" T' +. 4' \$+85' \$-R. ++. %. ' +\*J"Zb"9)() \*+"Z[! \M a\ "R. 0)488. \*\*"\$' 6">H02\$' (. ; 5%%8\*\*85' J"; 5%%8\*\*85' "\_)86\$' 0. "X. (\$468' ("8\*0-5\*)4. "X. -\$+. 6"+5"; -8%\$+. " ; 2\$' (. J"ke"N. 6MX. ("Z` ["Yf+2"N. , 4)\$41"Z[! []MR. . "@Mh4\$7%\$' "X. 8\*. 4J"Vc45(4. \*\*"8\*\*35\*\*8 , -. 1\*\*)\*+88' \$ , 88+1"8' "<R" 054354\$+. "\$K"\$' 6"(5L. 4' \$' 0. SJ"; 2M! ["8' "+28\*\*L5-)%. M ak"R. . "=\$4(("\$' 6"B. 68)8)P\*8^ . 6"; 5%3\$' 8. \*\*"\$' 6\_45)3\*\*Y9005)' +\*\*"\$' 6"X. 354+\*J"X. ()-\$+85' \*\*Z[ [fJ"R02. 6)-. "kJ" c\$4+"k"\$\*\*%. ' 6. 6" , 1"#2. " ; 5%3\$' 8. \*\*90+"Z[ [ \ "YR+4\$+. (80"X. 354+\*\$' 6"@84. 0+54\*\$"X. 354+J"X. ()-\$+85' \*\*Z[! aj"RI" Z[! a"?5!` k[MR. . "9M852' \*+5' J"VB\$47. +P-. 6\*\*)\*+88' \$ , 88+1"+245)(2"8' /54%\$+85' "68\*0-5\*)4. 1"+2. "<A"\$3345\$02SJ" ; 2M! e"8' "+28\*\*L5-)%. M af"N8' \$' 08\$-R+\$ , 88+1"h5\$46J"X. 05%%. ' 6\$+85' \*\*5"/+2. "#\$\*7"N540. "5' " ; -8%\$+. P4. -\$+. 6"N8' \$' 08\$-8\*0-5\*)4. \*J"N8' \$- X. 354+J"8)' . "Z[! kM a"><@"84. 0+8L. "Z[! bo`eo><"4. (\$468' ("68\*0-5\*)4. "5"/" 5' /8' \$' 08\$-8' \$' 6"68L. 4\*8+1"8' /54%\$+85' " , 1"0. 4+88' -\$4( . " 05%3\$' 8. \*\*"\$' 6"(45)3\*MR. . "TM"; 28)J"V8\*0-5\*)4. "4. ()-\$+85' "\$' 6\*\*)\*+88' \$ , 88+11". (8\*-\$+85' "\$' 6"(5L. 4' \$' 0. " 8%3-80\$+85' \*SJ"; 2Mak"8' "+28\*\*L5-)%. M b[">)453. '\$' " ; 5%%8\*\*85' J"; 5%%)' 80\$+85' "N45%"#2. " ; 5%%8\*\*85' "#5"#2. ">)453. '\$' "c\$4-8\$%. ' +J"#2. ">)453. '\$' " ; 5)' 08-J"#2. " ; 5)' 08-J"#2. ">)453. '\$' " ; . ' +4\$-h\$' 7J"#2. ">)453. '\$' ">05' 5%80"\$' 6"R508\$-; 5%%8+ . . '\$' 6"#2. "

"

#2."V,)\*&'.\*\*\*\$\*\*\*)\$-\$3345\$02"+5"054354\$+."\$'6"/&'\$'0&\$-"(5L.4'\$'0."g"+2."K.\$7"\*)\*+\$&'\$,&&+I"  
%\$'+4\$"g"&\*" .H.%3-W&.6'&'"+2.\*."4.05%%.'6\$+&5'\*\$'\$'6"3-\$'\*M'T'6..6J'"5'."2\$\*\*&'+456)0.6"\$'I"  
\*),\*+\$'+&L."54",&'6&'(4.()-&+&5'"05'0.4'&'(\*\*)\*+\$&'\$,.-"/&'\$'0.J"&'\*+.\$6"0.6&'("+2."&%3.+)\*\*"/54"+2."  
.H3\$'\*&5'"5"/V(4..'\$"%\$47.\*"+5"34&L\$+."0\$3&+\$-M'T' /54%\$+&5'"%\$'\$\$(.%. '+'\$'6"6&\*0-5\*)4.J"\$\*\*K.-"\$\*\*  
3456)0+\*+\$'6\$46&\*\$+&5'"\$4."34.L\$-.'+"%\$5'(\*+"34&L\$+.J"%\$47.+P-.6"%\$'\$\$(.%. '+'5"/&'L.\*+%.'+"4&\*7M'  
T'" +2&\*\*\*3&4&+J';\$4'.I"4.0.'+I'"5+.6"+2\$+"W/w&'\$'0&\$-"%\$47.\*"2\$L."+2."35+.'+&\$-"+5"&%345L."5)4"  
345\*3.0+\*\*"/54"+&07-&'("0-&%\$+."02\$'(.J' ,)+5'-I'&'K."%\$7."0-&%\$+."4&\*7\*\*'\$'6"53354+)'&&.\*\*

MS<sup>b</sup>!"

#2."-&%&+\$+&5'\*\$'5"/+2&\*"L&.K"5"/&'L.\*+%.'+'\$'+2."%\$045P\*0\$-."&'4.-&+&5'" +5"345,-.%\*\*5"/.H+4.%. "  
05%3-.H&+I"\*)02"\$\*\*0-&%\$+."02\$'(. "5)(2+"5",. "5,L&5)\*M'W2&\*+"6&\*0-5\*)4."\$'\$'6"+4\$'\*3\$4.'0I"\$4."  
' .0.\*\*\$4I'&'\$+.%3+&'("+\$"664.\*\*\*\*)02"345,-.%\*J"+2.I"\$4."5+\*\*)//&0&.'+'5"65\*\*5M#2.4."2\$L.",..'"  
'5+\$,-."\$+&07\*\*"5'" +2."5+&5'"5"/&'L.\*+54"4\$+&5'\$-&+I"J"K2&02"Q).\*+&5'" +2."/5)'6\$+&5'\*\$'5"/+2."4\$+&5'\$-"  
&'L.\*+54"%56.-"\$'6">B#U'&'6..6J"+2.".'+&4."6&\*0&3-&'."5"/.2\$L&5)4\$-/&'\$'0."&\*,) &+"))35'" +2."-/-\$K\*\*5/"  
\*)02"%56.-\*M<sup>Z</sup>"R)02"4.\*.\$402"4.L.\$-\*"+2\$+"&'L.\*+54\*\*\$4."%.4.-I"V,5)'6.6-IP4\$+&5'\$-\$'\$(.'+'\*K25"%\$7."  
/4.Q)'. '+'05('&+&L."4454\*\*+2\$'7\*\*+5"V-&%&+.6"05%3)+\$+&5'\$-\*7&-\*\*'\$'6\*\*."4&5)\*-I'/\$-K.6"%.%54&.\*MS<sup>ba</sup>"  
#2.\*."/\$-K\*\*"%\$I"4.)\*+&'\*\*."L.4."\$'\$'6"\*I\*+.%\$+&0".4454"J".\*3.0&\$--I'&'"+2."/\$0."5"/05%3-.H&+I"54"  
34.\*\*\*)4.\*"/54\*\*254+P+.4%"4.+)4'\*J"K2&02"\$4."5%'&34.\*.'+&'&'&'\$'0&\$-%\$47.\*+M<sup>pb</sup>"

B54."\*&'&/&0\$'+I'&'"+2."05'+.H+"5"/+2."02\$--.'("5"/0-&%\$+."02\$'(.J"+2."-.L.-\*\*5"/)'0.4+\$&' +I"  
05'0.4'&'(" +2."345,\$,&&&+&."\*\*\$'6\*\*0\$-."5"/6%%\$\$(.\*\*\*+. %&'&'("45%0-&%\$+."\*\*2&+\*\*\$4".H+4.%. -I"6..3J"  
,5+2"\*+4)0+)4\$--I'&'"+.4%\*\*5"/0-&%\$+."\*0&.'0."\$'\$'6"&'"+.4%\*\*5"/+4\$0+\$,&&+I"J",.0\$)\*. ".L\$-)\$+&5'\*\$'5/"

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;5%%&+.. "5"/#2."X.(&5'\*J"90+&5'"c-\$'1'N&'\$'0&'("R)\*+\$&'\$,.-."45K+2J"h4)\*\*.-\*J"flaMZ[!f";GBYZ[!f]"k"/&'\$-J"  
>)453.\$'";5%%&+\*\*&5'J"c4535\*\$-/54"\$X.()-&+&5'"5"/+2.">)453.\$'"c4-&\$%. '+'\$'6"5"/+2.";5)'0&"5'"6&\*0-5\*)4.\*\*  
. \*+\$,-&\*2%. '+'5"/\$"/4%\$.K547"+5"/\$0&&+\$+.\*\*)\*+\$&'\$,.-."&'L.\*+%.'+'h4)\*\*.-\*ZbMeMZ[!f";GBYZ[!f]"aea"/&'\$-J"  
>)453.\$'";5%%&+\*\*&5'J"c4535\*\$-/54"\$X.()-&+&5'"5"/+2.">)453.\$'"c4-&\$%. '+'\$'6"5"/+2.";5)'0&"5'"6&\*0-5\*)4.\*\*  
4.-&+&'(" +5\*\*)\*+\$&'\$,.-."&'L.\*+%.'+'\*\*\$'6\*\*)\*+\$&'\$,&&+I"4&\*7\*\*'\$'6"%.'6&'(" @4.0+&L."><]"Z[! \oZab!J"h4)\*\*.-\*  
ZbMeMZ[!f";GBYZ[!f]"aeb"/&'\$-J">)453.\$'";5%%&+\*\*&5'J"c4535\*\$-/54"\$X.()-&+&5'"5"/+2.">)453.\$'"c4-&\$%. '+'  
\$'6"5"/+2.";5)'0&"\$%. '6&'("X.()-&+&5'"Y><]"Z[! \o! [!!"5'"5K"0\$4,5'",.. '02%\$47\*\*'\$'6"35\*&+&L."0\$4,5'"  
&%3\$0+",.. '02%\$47"J"h4)\*\*.-\*ZbMeMZ[!f";GBYZ[!f]"aeb"/&'\$-M'  
b!"BM";\$4'.IJ"Vh.+.4"%\$47.+&' /54%\$+&5'"0\$' "2.-3"05%,+\$'0-&%\$+."02\$'(.S" J"Zf"8)'."Z[!k"R"  
v.%32\$\*&\*"66.6mM'  
bZ"?M'h\$4,.4&\*\$'\$'6"XM#2\$-.4J"V9"R)4L.I"5"/h.2\$L&54\$-N&'\$'0.S&' "\_MBM';5'\*\$'+&'&'&6.\*J"BM'D44&\*\$'\$'6"XMBMR+)-^J"  
"d5-M!9JY?54+2"D5--\$'6I">\*.L&.4"Z[a]"3M![\aM'  
ba";M85-\*J";MXMR)'\*+&'&'\$'6"XM#2\$-.4J"V9"R.2\$L&54\$-93345\$02"+5"=K"\$'\$'6">05'5%&0\*\$YI``f]"e["  
J"!bk!J"!bkM'  
bb">M9L(5)-.\$\*\*'\$'6"8M';)-.'J"VB\$47.+@&'0&3-&'."\$'\$'6"><";54354\$+."\_5L.4'\$'0."X./54%&'"+2."h\$'7&'("R.0+54I"  
B.4&+J"N\$--0&. \*J'\$'6";5('&+&L."h5)'6\$4&.\*SYZ[!b]"b!" J"ZfM'

"

~ "

35+. ' +&\$- . 05' 5%&0' 6\$%\$(. " /45%" 02\$' ( . \*\* +5' 3-\$' . +\$41' +. %3. 4\$+)4. \*\* \$4. " \*5' \*3. 0)-\$+&L. Mpe" #2. " 34. \*\*)4. \*\*3-\$0. 6"5' "+2. "%\$47. +"+5"0544. 0+1"l' +. 434. +"+2. "35+. ' +&\$-6\$%\$(. \*\*&' /-&0+. 6"5' "+2. ". 05' 5%I" /45%"0-&0\$+. "02\$' ( . "\$4. " . ' 54%5)\*J&' "+2. "%\$&' " , . 0\$)\* . "+2. "4. Q)&\*&. "&' /54%\$+&5' "65. \*\*\* 5+. H&+&' "\$' " &' +. 434. +\$, -. "/54%M>L. " "&"5' . "05)-6"\$((4. (\$+. "\$--6\$+\$J"+2. 4. "&"" 5"05' \* . ' \*)\*\*5' "+2. "345, \$, &-&&. \*\*5/" K\$4%&' (")35' "K2&02"+5", \$\*. "\$' I\*\* . 4&5)\*\*35-&01"34. \*04&3+&5' M'W2&\*"+2. "#; N@"/54". H\$%3-. " . ' 05)4\$ ( . \*\* /&' \$' 0&\$-&' \*+&)+&5' \*\*"+5. ' (\$ ( . "&' \*0. ' \$4&5"\$' \$-I\*&"/54"4&\*7"%\$' \$(. % . ' +")3)435\* . \*J"&\*%5\*+. H+4. % . " \*0. ' \$4&5"05' +. %3-\$+. \*\*0)\*+Zx; "K\$4%&' ( , I"+2. " . ' 6"5"/+2&\*0. ' +)4IMP\": . +J"+2. "W54-6"h\$' 7". \*+&%\$+. \*\* +2\$+-. L. " ")' 6. 4"\$V%. 6&)% , )\*&' . \*\*P\$\*P)\* )\$-3\$+2K\$1\$+2. 4. "&\*" "\$b["3. 4"0. ' +02\$' 0. "5/"\$+-. \$\*+bx; " K\$4%&' ( , I"Z! [ [IMPk"

#2&")' 6. 4%&' . \*\*\$7. I"+. ' . +5"/4&\*7"%\$' \$(. % . ' +&%3-&. 6", I">B#1"+2\$+/"&' \$' 0&\$-"%\$47. +\*\*K&-"\$44&L. "\$+ "\$05%3-. +. \*\*. +5"/05' +4\$0+\*/54"\$--34. 6&0+\$, -. "/)+)4. \*\*+\$+. \*\*, I"0544. 0+1". \*+&%\$+&' ("-\$345, \$, &-&&. \*\*5/" \$--"/)+)4. " . L. ' +\*MB\$47. +"/540. \*\*\$4. " . H3. 0+. 6"+5"04. \$+. "53+&%\$-"054354\$+. "05' +4\$0+\*U&"+2. "05' +4\$0+\*\* K. 4. "5'+53+&%\$-J"4\$+&5' "\$\$(. ' +\*\*K5)-6"4. " . (5+&\$+. +2. %)"&' +2. I"K. 4. MhI"&%3-&0\$+&5' J"+2. 4. "\$4. " ' 5"+\$+. \*\*/54"K2&02" ' 5"05' +4\$0+&\*"+4\$6. 6M'900546&' ("5"+2&\*L&. KJ"&' +. \$6"5/"345L&6&' (" . (\$-4)-. \*\*"+5" (5L. 4' "054354\$+. " . H02\$' ( . J"+2. "-\$K"5)(2+\*\*&%3-I"+5"W05%3-. +. W"53. ' P. ' 6. 6"05' +4\$0+\*\$b^f"\$' 6"4. -I"5' " %\$47. +6&\*0&3-&' . "+5"4. ()-\$+. "05' 6)0+\$' 6"(5L. 4' \$' 0. M"

: . +J"+2. "%\$47. +0\$' ' 5+("/)-I"34&0. \*\*)02"05' +4\$0+\*\*K2. ' "+2. "6\$+\$"\$4. ")' \$L&\$-, -. "\$' 6\*\*), 0. 0+5\*\*")02" -. L. -\*\*5"/)' 0. 4+\$&+IMP""T' \*\*)02"0&40)%\*+\$' 0. \*J"&' 04. \$\*. 6&' /54%\$+&5' "05' 0. 4' &' ("4&\*7"/54"K2&02"K. " 2\$L. " ' 5"4. -&\$, -. "345, \$, &-&&I". \*+&%\$+. \*\*K&-" ' 5+"" . 0. \*\*\$4&-I"3456)0. " . //&0&. ' +0\$3&+\$-\$--50\$+&5' M'R)02" 5, \*. 4L\$+&5' \*0\$--&' +5"Q). \*+&5' "+2. "0. ' +4\$-"34&' 0&3-. \*\*5"/+55-\*\*) \* . 6&' "%56. 4' "4&\*7"%\$' \$(. % . ' +P"&' " 3\$4+&0)-4J"05\*+P, . ' . /&+"\$' \$-I\*&\*Y; h9J"\$' 6"d\$-). P\$+PX&\*7Yd\$X]M=55\*. -IJ"+2. \* . "+. 02' &Q). \*\*4. -I"5' "+2. "

be^BM^MW. &^%\$' J'VG' "B56. -&' ("'\$' 6'T' +. 434. +&' ("2. ">05' 5%&0\*\*5"/; \$+\*\$+4532&0"; -&%\$+. "; 2\$' ( . \$YZ[[[ ]"~" ! J"!J"!M b\^#2. "#; N@05% . ' +\*1"VI' "/&' \$-&'&' ("&\*+4. 05% . ' 6\$+&5' \*\*\$' 6")&6\$' 0. J"+2. "#\$\*7"N540. "0-\$4&/&. 6"54(\$' &'&+&5' \*\* \*25)-6"6. \*04&. "25K"4. \*&-&. ' +"+2. &""+4\$+. (&. \*\*\$4. "5"0-&0\$+. P4. -\$+. 6"4&\*7\*\*\$' 6"53354+) ' &+&. \*J"+7&' ("&' +5" 05' \*&6. 4\$+&5' "\$+4\$' \*&+&5' "+5"\$"-5K. 4P0\$4, 5' " . 05' 5%I"05' \*&+ . ' +K&+2"\$Zx; "54"-5K. 4\*0. ' \$4&5"\$' 6J"K2. 4. " 4. -. L\$' +J\*0. ' \$4&5\*\*05' \*&+ . ' +K&+2"%54. " . H+4. % . "32I\*80\$-4&\*7\*MS#2. "#; N@"/)4+2. 4"4. 05% . ' 6\*\*"+2\$+5' -I"VZx; " 54"-5K. 4\*0. ' \$4&5V\*W\$4. "%\$6. "3), -&0-I"\$L&\$-, -. M'R. . "#; N@3Maem bk^9\*\*\$' " . H\$%3-. "5"/+2&\*)' 0. 4+\$&' +IJ"+2. "Tc; ; "&"Z[[["\$4(). 6"+2\$+(-5, \$-+. %3. 4\$+)4. \*\*%&(2+4&\*. "\$' I K2. 4. " , . +K. . ' "IMbx; "\$' 6"eMfx; " , I"Z! [ [MT' 6. . 6&+"2\$\*", . . "25K" "+2\$+\*\* . L. 4\$-"5"/+2. "Tc; ; \$\*\*34. 6&0+&5' \*\*%\$6. " , . +K. . ' "Z[[["\$' 6"Z[! a"/54(-5, \$-+. %3. 4\$+)4. 4&\*. \*\*64\$+&80\$--I)"' 6. 4. \*+&%\$+. 6"+2. "345, \$, &-&&I"5"/. L. ' +)\$- +. %3. 4\$+)4. 4&\*. \*\*MN54". H\$%3-. J"0-&%\$+. "%56. -\*\*3450. 0+&' ("4. \$+. 4"\$%5)' +\*\*5"K\$4%&' (+2&\*0. ' +)4I"\$4. "2. " 5' . \*\*"+2\$+, . \*+&-&' ("K&+2\$\*, \*. 4L\$+&5' \*\*5"/+2. "0)44. ' +0-&%\$+. M'R)02"/&' 6&' (\*\*\*)((. \*+2\$+Tc; ; "%56. -\*\*4. %\$&' " -&7. -I"+5)"' 6. 4. \*+&%\$+. "/)+)4. "K\$4%&' (M'R. . "cM#Mh45K' "\$' 6"AM; -\$6. 84\$JV\_4. \$+. 4"/)+)4. "(-5, \$"K\$4%&' (" &' / . 44. 6"/45%">\$4+2\$"4. 0. ' +. ' . 4(I , )6(. +\$YZ[[k]eeZ" J"beM'R. . "\$-5"W54-6"h\$' 7\_45)3J"#)4' "@5K" "+2. " D. \$+I; 5' /45' +&' ("2. "? . K"; -&%\$+. "?54%\$-J"Z[! bM bf!>\$+ . 4, 4557"\$' 6"N&\*02. -J" J3Maem b"R)02)"' 0. 4+\$&' +I"&\*5/. ' "+. 4%. 6"VA' &(2+&\$' SJ"K2&02"6. ' 5+. \*\*5)+05%. \*\*Y, . "+2. I"7' 5K' J)"' 7' 5K' "54" 6&\*3)+. 6J"/54"K2&02"345, \$, &-&&I\*\*+\$+. % . ' +\*0\$' ' 5+, . "%\$6. J", . 0\$)\* . "+2. "6\$+\$"\$4. "+55"% , &(5) \*M'R. . "NMDM A' &(2+J" Y; % , 4&6(. 1"X&L. 4\*86. "c4. \*\*J"! `Z! ]M

05%, &' \$+&5' " 5/" &' /54%\$+&5' " 6&\*0-5\*)4. " \$' 6" \*532&\*+&0\$+. 6" /&' \$' 0&\$- " 4&\*7" %56. --&' (" +5" 3456)0. " 345, \$, &&-I". \*+&%\$+. \*\*5"/+2. "05\*+\*\*5/"-5\*\*. \*\*/45%"L\$4&5) \*\*0. ' \$4&5\*M'D5K. L. 4J"&' "+2. "0\$\*. "5"/; h9J" 34. L&&&' ("6&\*05)' +&' ("% .+2565-5(&. \*\*5/+. ' "3456)0. "3. 4L. 4\*. "4. \*)-+\*\*K&+2"4. \*3. 0+ "+5". ' L&45' %. ' +\$- " 6\$%\$(. \*J"&' 0-)6&' (" /45%"0-&%\$+. "02\$' (. M@&'05)' + "4\$+. \*\*\$4. ") \* . 6"+5"345L&6. "' . + "L\$-). \*\*5/"34. \*. ' + "&' L. \*+% . ' +\*J"+2. "L\$-). "5/"K2&02"4. 34. \*. ' +\*\*+2. "0)44. ' + "K54+2"5/"\$"/+)+4. "0\$\*2"/-5K"54")%5"/%5' . I" (&L. ' "\$\*\*3. 0&&. 6"4\$+. "5/"4. +)4' MhI"&+\*\* \$+)4. J"0-&%\$+. "02\$' (. "%&&(\$+&5' "05%, &' . \*\*L. 4I"2&(2")3P/45' + " 05\*+\*\*K&+2"\$' . H+. ' 6. 6"3. 4&56"5/"\*\*%\$- , . ' /&+\*\*K2&02"%\$1"05' +&' ). "/54"0. ' +)4&. \*\*M"W2. ' "6&\*05)' +. 6" \$+\*\*+\$' 6\$46"4\$+. \*J"+2. "' . + "34. \*. ' + "L\$-). "5/"\*)02"%&&(\$' +\*\*L\$' &\*2. \*M^["W2&+\*\$3345\$02. \*\*"+5"0-&%\$+. " \$' 6" . ' L&45' %. ' +\$- " 6. (4\$6\$+&5' " 2\$L. " , . 05%. " %)02" %54. " \*532&\*+&0\$+. 6" &' " . ' L&45' %. ' +\$- " . 05' 5%&0\*J^!"%5' . I"%\$' \$(. 4\*\*05' +&' ). "+5"6&\*3-\$1"34. / . 4. ' 0. \*\*/54"6&\*05)' + "4\$+. \*\*K2&02"&%3-I"-5K. 4" &%3\$0+\*\*5' "&%%. 6&\$+. "L\$-). \*J". L. ' "K2. ' "+2&\*4. \*)-+\*\*&' (&' 54\$' 0. "5/"35+. ' +&\$-/54"0\$+\$+4532&0"-5\*\*. \*\* /)4+2. 4"&' "+2. "/+)+4. M^Z"

T' "+\$' 6. %J"+. 02' &Q). \*\*\*)02"\$\*\*d\$X"\$4. "5/+. ' "&' \$334534&\$+. "+55-"/54". ' (\$&' ("K&+2"2I3. 4P05%3-. H" &\*\*) . \*\*\*)02"\$\*\* . +&&' ("0-&%\$+. "35-&0I"54"0\$-0)-\$+&' (" /&' \$' 0&\$- " . H35\*)4. \*\*"+5"0-&%\$+. "02\$' (. M^a"#2. " 05%35)' 6. 6" . // . 0+\*\*5/" . L. ' +\*\*&' "\$" ' 5' P-&' . \$4\* I\*+. %\*\*)02"\$\*\*+2. " (-5, \$-"0-&%\$+. J"&' "K2&02"\*\$-\$- " 02\$' (. \*\*&' 5' . "3\$4+5"/+2. \*\*I\*+. %%%\$1"- . \$6"+5-\$4(. J)' 34. 6&0+\$, -. " . // . 0+\*\*&' "\$' 5+2. 4J"% . \$' "+2\$+ " . ' L&45' %. ' +\$- " 6\$%\$(. \*\* %\$1" , . " \* . L. 4. -I" )' 6. 4. \*+&%\$+. 6M^b" X\$+2. 4" +2\$' " /5--5K&' (" \$" ' 54%\$- " 6&\*+4&, )+&5' J!+2. \*. "4&\*7\*\*\$4. "2. \$LIP"54"/\$+P+\$&. 6J"% . \$' &' (" +2\$+ "+2. "4&\*7\*\*5"/. H+4. %. "65K' \*&6. \*\*/45%" -\$4(. " . +. %3. 4\$+)4. "02\$' (. \*\* \$4. " ' 5' P' . (-&(&, -. M^c" 9+\*)02"- . L. -\*\* Y&' "+2. ' +\$&\*J" . 05' 5%&0" 6\$%\$(. " , . 05%. \*\*\* . L. 4. 1"@&. +^"\$' 6R+. 4' /54". H\$%3-. " . \*+&%\$+. "+2\$+)' 6. 4\*\*)02"\$bx; "K\$4%&' ("\*0. ' \$4&5J"\$' )\$- \_@c"K&-" , . "e["3. 40. ' +"-5K. 4"05%3\$4. 6"+5"\$\*\*0. ' \$4&5"K2. 4. " "5"K\$4%&' ("500)4\*M^"\

e["NM^907. 4%\$' "\$' 6"TBMN&' -\$1\*5' J"V#2. ">05' 5%&0\*\*5"/&' \$0+&5' "5"0-&%\$+. "02\$' (. 1"\$\*\* . ' \*&&L+I"\$' \$-I\*&\*S^YZ[[\]"^ " J^e["M" e["900546&' (&"+2. ">05' 5%&\*+T' +. --&(. ' 0. "<' &+Y>[<]1"V9w\*\*0-&%\$+. "02\$' (. "&\*"\$-5"\$\*\*I\*+. %&0"345, -. %)"K&+2" &\*\*) . \*\*5/"K&6. 4\*\*50&. +\$-05' 0. 4' J"&+&\*5/+. ' "\$334534&\$+. "+5\$33-I"\$-5K. 4"6&\*05)' + "4\$+. J"05' \*&\*+ . ' + "K&+2"3), -&OP \* . 0+54"\$0+54\*\*+2\$+2\$L. "5' (. 4"+&% . "254&^5' \*\*"+2\$' "&' 6&L&6)\$-\$M^VW2. ' "+2. " . H3. 0+. 6"-5\*\*. \*\*\$4. "05' \*&6. 4. 6"/45%" +2. "35&' +5"/L&. K"5/"\$"(5L. 4' %. ' +Y"+2. I"4&\* . "64\$%\$+&0\$--I MN45%"+2. "3), -&OP\* . 0+54"3. 4\*3. 0+&L. J"+2. " . H3. 0+. 6" L\$-). "5/"\$"/+)+4. "K&+2"\x; "5/"K\$4%&' ("4. 34. \*. ' +\*\*34. \*. ' + "L\$-). "5\*\* . \*\*K54+2"<Rj ba+4' z a[r"5"/+2. " . ' +&4. " \*+507"5"/%\$' \$(. \$, -. "\$\*\* . \*M^R. . ">I<J"#2. "05\*+5"/&' \$0+&5' 1"X. 05(' &\*&' (+2. "L\$-). "\$+4&\*7"/45%"0-&%\$+. "02\$' (. J" Z[!eJ"3M^ZM eZ"@M^h\$4+5' J"VX. /50)\*&' ("0\$3&+\$-&%5" "+2. "-5' (" . 4%1"5K' . 4\*2&3"\$' 6"+4)\*+\$045\*\*\*+2. "&' L. \*+% . ' + "L\$-). "02\$&' S" YZ[!k]aa J"! f f M e^a; M9M^9^\$4'\$' 6"AM=&' 6(4. ' J"V; \$+\$+4532&0">L. ' +\*\*\$' 6"R+502\$\*+&0"; 5\*+P, . ' . /&+9' \$-I\*&\*5"/; -&%\$+. " ; 2\$' (. S^YZ[[a]" e\ " J"ZbeM eb"RMDM^R02' . &6. 4J"V9. 4)3+\*\* 5' P-&' . \$4"0-&%\$+. "02\$' (. J"&4. L. 4\*&, &&-I"\$' 6\*\*)434& . S^YZ[[b]"!b" J"ZbeM ee"?M?M^\$- . , J" : M^h\$4P: \$%J"XM^@5)\$6I J"8M^?54%\$' "\$' 6"XM^X. \$6J"V#2. "c4. 0\$)+&5' \$4I" c4&' 0&3-. 1"N4\$(&&-I"\$' 6"h-\$07" RK\$' \*\*"/45%"c5-&0I"90+&5' \*SJ"? : ">H+4. %. "X&\*7T' &+&\$+&L. "W547&' ("c\$3. 4J"Zb"8)-I"Z[!bM e\ "RM^&. +^"\$' 6"?M^R+. 4' J"V> 65(. ' 5) \*\* (45K+2J"05' L. H&+I"5"/6\$%\$(. "\$' 6"0-&%\$+. "4&\*7I"25K"?5462\$)\*p/4\$%. K547" \*)3354+\*\*6. . 3)0)+\*\*&' 0\$4, 5' " . %&\*&5' \*S^YZ[!e]!"Ze" J^ekbM"

!!"

#2. " -&%&+\$+&5' \* 5/" \*)02"%56. --&' (" . H. 40&\* . \*\* 2\$L. " 5/" 05)4\* . " , . . ' " K. --P6. %5' \*+4\$+. 6" &' " /&' \$' 0&\$-" %\$47. +\*\*5L. 4"+2. " 34. L&5)\*\* 6. 0\$6. M': . +J"+2. ") ' 0. 4+\$&' +I" 4. -\$+&' (" +5" 0-&%\$+. " 02\$' ( . " 4&\*7\*\*&""\$+" . \$\*+" 05%3\$4\$, - . " +5"+2. " 4&\*7\*\*"+5"+2. " /&' \$' 0&\$-" \*I\*+. %" 35\* . 6" , I"\*+4)0+)4. 6\*\* . 0)4&+&. \*\*&' "+2. " 34. -)6. " +5"+2. " /&' \$' 0&\$-" 04&\*&M' h\$\* . 6" 5' " +2&\* 05%3-. H&+I" \$' 6" \$\*\* . H3-\$&' . 6" , I" +2. " +4\$ ( . 6I" 5/" +2. " 254&^5' J" +2. " &' /54%\$+&5' " 6&\*0-5\*)4. " 3\$4\$6&(%-"\$07\*\*4. \$-")&+I" +2. \* . " 02\$-- . ' ( . \*\*\$4. "" 5+\*\*5-), - . "+245) (2\*\*+\$' 6\$46" 4&\*7%"\$' \$ ( . % . ' +M'B54. 5L. 4J". L. ' "&/"\*)02". \*+&%\$+. \*\*05)-6" , . "%\$6. "\$00)4\$+. -IJ"+2. 4. "&"" 5"% . 02\$' &\*%" K&+2" K2&02" &' L. \*+54\*\* \$' 6" &' \*+&+)+&5' \*\* %I" 345+. 0"+2. %\* . -L. \*\* /45%" -5\*\* . \*\* L&\$" 2. 6(&' (" +245) (2" 05)' +. 4L&& (&' 35-&0&. \*J&' \*)4\$' 0. "54&' L. \*+%. ' +6&L. 4\*&80\$+&5' "+5"5//\*. +"+2. "4&\*7\*\*&' L5-L. 6"+5"+2. "L\$-). " 5/" +2. &4\$\*\* . +\*\*\$' 6"/)+)4. " 345/&+\$, &+I M'>\*+&%\$+. \*\* 3-\$0. "+2. " . -L. - 5/" \*5P0\$--. 6"V)' 2. 6 ( . \$, - . " 4&\*7\$"\$+ " 45)' 6"2\$"/-5/" +2. " +5+\$-5/" 35+. ' +&\$-&%3\$0+\*\*5' /&' \$' 0&\$-"\$\*\* . +L\$-). \*M^k"9"\*I%, 5-5/" +2. "\$, \*)46&+I"5/" 2. 6(&' (" (\$&' \*+\*\*)02"4&\*7\*\*g"\$ \$' 6"+2. "\*\*254+P. 4%&+"\$3345\$02"+5"6. \*35&&' (" +2. "3-\$' . +&' "+2. " " %\$. "5/" 054354\$+. "345/&"g"&"">-5' "B) \*7\$\*\*6. 0-\$4\$+54I")-&%\$+. "2. 6 ( . 1"+5"05-5' &\* . "B\$4\*M^f"

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#### 4. What can be done?

N54"+2. " 4. \$\*5' \*\* 5)+&' . 6" \$, 5L. J" 4. -I&' (" )35' " +2. " &' /54%\$+&5' " 6&\*0-5\*)4. " 3\$4\$6&(%+"5" 6. +. 4%&' . " 53+&%\$-"35-&0I"&' "345%5+&' (\*) \*+\$&' \$, &+I "&""\$05' 0. 3+)\$-I"/-K. 6". ' 6. \$L5)4M^#5"+2. " . H+. ' +"+2\$+("\$3\*\* \$' 6")' 6. 4\*+\$' 6&' (" \$, 5)+"+2. "4\$' ( . "5/" 345, \$, &+&. \*\* (5L. 4' &' (" +2. " . // . 0+\*\*\$' 6"4&\*7\*\*5/"0-&%\$+. "02\$' ( . " 3. 4\*&+J". H&\*+&' (" 34&' 0&3-. \*\* K2&02"\*)335\* . 6-I" (5L. 4' " , 5+2"&' L. \*+54" , . 2\$L&5)4" \$' 6"/&' \$' 0&\$-"%\$47. +" 5)+05%. \*\*0\$' ' 5+", . "4. -&. 6")35' "+5"+2. " . H0-)\*&5' "5/" \*+45' (P/54%\*\*) \*+\$&' \$, &+I" 4. /54%\*M^I" \*+254+J"\$ V05%%\$' 6P\$' 6P05' +45-\$" \$3345\$02" &\* 4. Q) &4. 6" +5" \$664. \*\*\* 34&L\$+. " \* . 0+54" /4. . P4&6&' (" , . 2\$L&5)4" \$' 6" %&\*%\$+02. 6"4. \*5)40. "\$--50\$+&5' J"&' "\$66&+&5' "+5"%\$47. +P-. 6"\*) \*+\$&' \$, - . "/&' \$' 0. "6. L. -53%. ' +\*M^#2&\*" %) \*+&' 0-)6. " , &' 6&' (J"%\$' 6\$+54I"3), -&0-\$K"\$ \$' 6"4. () -\$+&5' M^#2. "" . . 6"/54")02"% . 02\$' &\*%\*", . 05%. \*\* . L. ' "%54. "34. \*\*&' ("05' \*&6. 4&' (" +2. "6. 3+2"\$ \$' 6"\*0\$-. "5/" +2. "4&\*7\*\*35\* . 6" , I"0-&%\$+. "02\$' ( . "\$' 6"5+2. 4" 5' (5&' (" +4\$' \* (4. \*\*&5' \*\*5/" 3-\$' . +\$4I" , 5)' 6\$4&. \*M^

I' "+2. "05' +. H+"5/" +2. " /&' \$' 0&\$-"\*I\*+. %J"+2. 4. "\$4. " . H&\*+&' (" /5)' 6\$+&5' \*\* +2\$+"%\$I" , . " , )&+) 35' "+5"+\$07-. " \*)02"4&\*7\*\*M^N54". H\$%3-. J"+2. 4. " \$4. " . \*+\$, -&\*2. 6" \*+4. \*\*P+. \*+&' (" 4. (&% . \*\* \$-4. \$6I" &' " 3-\$0. " +2\$+"YK2&+\* "&%3. 4/ . 0+]2\$L. " , . 05%. " . \*+\$, -&\*2. 6" . -. % . ' +\*\*5"/&' \$' 0&\$-"4. () -\$+54I"\$402&+. 0+)4. M^R&%&\$4-IJ"&' "+2. " 0\$\* . "5/" , \$' 7"0\$3&+\$-4. Q) &4. % . ' +\*\*\$' 6"0. ' +4\$- , \$' 7"%5' . +\$4I" 35-&0&. \*J"2&(2P-. L. -&' +. 4L. ' +&5' \*\* +5" \*)3354+"Y54"6&&' 0. ' +&L&\*. J"3\$4+&0)-\$4"/54%\*"5/" , \$' 7-. ' 6&' (2\$L. "\$-4. \$6I" , . . ' . ' \$0+. 6"\$+"+2. "><-. L. -M^

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ek", %\$, 4&6 ( . "I' \*+&+)+. "5/"R) \*+\$&' \$, &+I " =. \$6. 4\*2&3J"<' 2. 6 ( . \$, - . "X&\*7I"R+4. \*\*\*#. \*+&' ("R. ' +&% . ' +&' "\$"; 2\$' (&' ( " ; -&%\$+. J"Z[! eM^

ef^B&02. -. "D\$' \*5' J"V>-5' "B) \*7\$\*\*B\$4\*\*3450. 0+"&""+2. ") -&%\$+. \*\* I%, 5-5/"5)4"+245K\$K\$I"0)+)4. SJ" Z"G0+5, . 4"Z[! kM^

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h\$' 7\*\*&' "%\$' l"0)4&\*6&0+&5' \*\*0)44. ' +l")' 6. 4(5"\$' ' )\$-\*\*+4. \*\*P+. \*+&' (M'R)02"+. \*+\*\*\$--5K"\$)+254&&. \*\*+5" 6. +. 4%&' . "K2. +2. 4", \$' 7\*5"0\$3&+-\$' 6"-&Q)&6&l" , )//. 4\*\*\$4. "\*\*+45' (".' 5)(2"+5"4. \*&+\*\* . 4&5)\*-l"\$6L. 4\* . " 05' 6&&5' \*\*"\$' 6J"K2. 4. " . 0. \*\*\$4lJ"+5"4. Q)&4. "&' \*+&)+&5' \*\*+5", )&6P)3"/)4+2. 4"\*+4. ' (+2M#2. "4. \$\*5' "/54" +2&\*\*&"Q)&+. \*\*+4&(2+/54K\$46l"\*+4. \*\*P+. \*+&' ("g"/&65' . "3453. 4-l"g"0\$' "34. 3\$4. "+2. "/&' \$' 0&\$-\*\*l\*+. %"/54" 05%%5" " \*2507\*\* +2\$+ 2&+&' 6&L&6)\$-\$' &' \*+&)+&5' \*\* \*&%) -+\$' . 5)\*-lJ"+2)\*\* 4. 6)0&' (" +2. " /4\$(&-&l" 5"/+2. " /&' \$' 0&\$-\*\*l\*+. %Mh. 0\$)\*. "/&' \$' 0&\$-&' \*+&)+&5' \*\*0\$' ' 5+"4&\$\* . "/) ' 6\*\*&' "0&40)%\*+\$' 0. \*\*K2. 4. "\$--\$4. "/0&' (" -5\*\* . \*J"+4. \*\*P+. \*+&' ("\*0. ' \$4&5\*\*0\$' "34. 3\$4. "&' \*+&)+&5' \*\*/54"345+4\$0+. 6"3. 4&56\*\*5"/-5\*\* . \*\*54\*\* . &^ . 6P)3" /)' 6&' ("%47. +\*M: . +2&\*"&" 5"+2. "5' -l"/)' 0+&5' 5"/+4. \*\*+. \*+\*1"+2. l"\$0+"34& 0&3\$-l"\$\*\*"\$' . H"\$' +. "/45' +P \*+53"+55-"5"34. L. ' +2. " , )&6P)3"5"/4&\*7\*\*K&+2&' +2. \*\*l\*+. %Mh. 0\$)\*. "5"/+2&\*J"+4. \*\*P+. \*+&' ("&\*\$(4)\$ , -l" V+2. "%5\*+"35K. 4/)-"34)6. ' +&\$-+55-"K. "2\$L. "\$+5)4"6&\*35\*\$-"/54"\*\$/. ()\$46&' (" +2. "4. \*&&. ' 0. "5"/+2. " /&' \$' 0&\$-\*\*l\*+. %M<sup>e</sup>"

B55+. 6" ' 5L. -" \$3345\$02. \*\* +5" \*+4. \*\*P+. \*+&' (" &' " +2. " 05' +. H+ 5/" 0\$4, 5' " . H35\*)4. " . %32\$\*&' . " +2. " L)-' . 4\$, &&l" 5"/+2. " /&' \$' 0&\$-\*\*l\*+. %"+5" \*5P0\$--. 6"V\*+4\$' 6. 6"\$\*\* . +\*M<sup>c</sup>) +\*&%3-lJ" \*+4\$' 6. 6"\$\*\* . \*\*\$4. " +25\* . "\$\*\* . +\*5K' . 6"54"2. -6", l"054354\$+&5' \*\*54"5+2. 4", )\*&' . \*\*\*. ' +. 434&\*. \*J"K2&02"\$4. 0)44. ' +l")' ) \* . 6J" '\$' 6"\$4. "\$+35+. ' +&\$-4&\*7"5"/' . L. 4", . &' (") \* . 6J"6). "/54". H\$%3-. "+5"02\$' (&' ("4. ()-\$+&5' \*J". \*3. 0&\$-l"&' " 4. -\$+&5' "+5"0-&%\$+. "02\$' ( . M<sup>T</sup>"05&' +4. \* . \$402J"+2. " ; \$4, 5' "#4\$07. 4"l' &&\$+&L. "\$' 6"\_4\$' +2\$% "X. \* . \$402" T' \*+&)+. " &' " Z[l a" \*25K. 6" )\*&' (" +2. " . H\$%3-. " 5/" \*+4\$' 6. 6" \$\*\* . +\* +2\$+ "\$' +2. " 34. L&&&' (" 0\$3&+-\$" . H3. ' 6&+4. " 5"/ /5\*\*&" /). . - \*&+. "\$' 6"/&. -6" 6. L. -53%. ' +J" \$+-. "\$+ " j \Mkb" +4&-&5' " K5)-6" , . " K\$\*+. 6" &' " 6. L. -53&' ("4. \* . 4L. \*\* +2\$+ "\$4. "-&7. -l" +5", . 05%. " )' , )4' \$, -. M<sup>l</sup>"9' 5+2. 4"\*+ )6l". \*+&%\$+. \*\* +2\$+ /&' \$' 0&\$- \*l\*+. % . H35\*)4. \*\* +5"0\$4, 5' P&+ . ' \*&L. \*\* . 0+54\*\*&' +2. "><"\$-5' . " . H0. . 6"l!" +4&-&5' J"K&+2"35+. ' +&\$-5\*\* . \*\* 5"/, . +K. . ' "l ae[" , &-&5' "\$' 6"l b[" , &-&5' J". L. ' ")' 6. 4"\$' "546. 4-l")' K&' 6M<sup>l</sup>"

T%354+\$' +lJ"&' +2. "0\$\* . "5"/+4. \*\*P+. \*+&' (" /54"-5\*\* . \*\* . L. ' +)\$+&' (" /45%"0-&%\$+. "4&\*7\*\*g"\$\*\*5335\* . 6"+5" 4. ()-\$+54l\*\*2&+\*\*4. -\$+&' (" +5"0\$4, 5' "\$\*\* . +\*g" 5"/54%\$-\*\*0. ' \$4&5\*\*2\$L. "l. +. . ' "&' +456)0. 6M<sup>Z</sup>"h\$\* . 6"5' " K2\$+"K. "2\$L. "6&\*0)\*\* . 6"\$, 5L. J&' 3)+\*\*+4. \*\*54\*\*&' +5\*\* )02"+. \*+\*\*%) \*+"345(4. \*\* "+25\* . "35\* . 6" , l" \*5P0\$--. 6"V+4\$' \*+&5' "4&\*7\*5"+2\$+0)44. ' +l"65%&' \$+. "6. , \$+. \*\*5' " . ' L&45' % . ' +P4. -\$+. 6"\*+4. \*\*P+. \*+&' (M<sup>9</sup>\*\* K. " 2\$L. " ' 5+. 6J" +2. " 32l \*&0\$-4&\*7\*\* /45%"0-&%\$+. " 02\$' ( . "\$4. " , 5+2" 2&(2-l")' 0. 4+\$&' "\$' 6" /\$+P+\$&. 6J"

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e"RM\_M; . 002. +&l"VG" +2. "R. 3\$4\$+&5' "5/"B5' . +\$4l"\$' 6"c4)6. ' +&\$-c5-&0l1"D5K%)02"5"/+2. "34. P04&\*&"05' \* . ' \*)\*\* 4. %&\$' \*q\$; >cX"@&\*0)\*\*&5' "c\$3. 4"! [ `b`J"?5L. %, . 4"Z[l eM \["; \$4, 5' " #4\$07. 4"l' &&\$+&L. "\$' 6"\_4\$' +2\$% "X. \* . \$402"l' \*+&)+. J" <' , )4' \$, -. " ; \$4, 5' " Z[l a1" W\$\*+. 6"0\$3&+-\$" '\$' 6" \*+4\$' 6. 6"\$\*\* . + \* Z[l aM \l"NMVW. l^&(J"hMA) . 33. 4J"8MVM'L\$" \_\_. -6. 4"\$' 6"XML\$' "#&, )4(J"V#2. "c4&0. "5"/@5&' ("#55"=&+-. "#55"=\$+. U"+2. "T%3\$0+ 5"/+2. " ; \$4, 5' "h", . -. "5" +2. ">)453. \$' "N&' \$' 0&\$-RI\*+. %\$"\_4. . ' "?" . K"@. \$-R. 4&. \*\*?5M! !J"Z[l bM \Z"R. . "MD557J"V; . ' +4\$-, \$' 7"02& . /\*\*5)' 6"K\$4' &' ("5"0-&%\$+. "02\$' ( . SJ" J"~"934&"Z[l fM

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05%3-. +. "4)&' '\*0. ' \$4&5\*\*\$4. "35\*\*&, -. "\$' 6J"\$00546& (' +5"%\$' l"0-&%\$+. "%56. -J"' 5' P'. (-&( &, -. M#2. \*. " \$4. " 34. 0&\* . -l" +2. " 0&40)%\*+\$' 0. \*\*&' " K2&02"\*+4. \*\*\*+. \*+\*\$4. " %5\*+" )\*. /)-M T%354+\$' +-lJ" \$\*\*' 5+. 6", l" \_5562\$4+l"V9+"34. \*. ' +l"+2. "4. -. L\$' +"\$)+254&&. \*\*0\$' "0255\*. "\$' l"\*0. ' \$4&5"/54"+2. "\*\*+4. \*\*\*+. \*+2\$+"+2. l" +2&' 7"/&+J"\$33-l"34534&. +\$4l"\$' 6")' 6&\*0-5\*. 6"%56. --&' (" +5"\$\*\* . \*\*\*+2. "5)+05%. J"\$' 6")\*. "+2. "4. \*)-+\*\*+5" 0\$07")3"4. Q)&. 6"0\$3&+-\$Y\$' 6"-&Q)&6&+lJ"+5"K2\$+. L. 4"- . L. -"+2. l"34. /. 4yS`a"R+4. \*\*P+. \*+&' (" +2. ", \$' 7&' (" \*l\*+. %&' "4. -\$+&5' "+5". H+4. %. "0-&%\$+. "\*\*0. ' \$4&5\*J"\$' 6" 5"+6. -&%&&' ("\*)02+. \*+\*\*+5"+2. &'\*\*). "5"/4. ()-\$+54l" 4&\*7J"&\*"+2. 4. /54. "3-\$)\*&, -. M'R&(' &/&0\$' +lJ"4. ()-\$+54\*\*&' \*\*5%. "0)4&\*6&0+&5' \*\*\$-4. \$6l". %3-5l"L\$4&\$' +\*\*5/" \*)02+. \*+\*M'G'. \*\*)02"L\$4&\$' +&'7' 5K' "\$\*\*V4. L. 4\*. \*\*+4. \*\*P+. \*+&' (S1"/&' \$' 0&\$-"/&4%\*\*\$4. "4. Q)&. 6"+5"\$\*\* . \*\*\* \*0. ' \$4&5\*\* \$' 6" 0&40)%\*+\$' 0. \*\* +2\$+" K5)-6"4. ' 6. 4"+2. &4" , ) \*&' . \*\*\* %56. -\*\*) ' L&\$, -. J" &' "+2. " 3450. \*\*\* &6. ' +&/l&' (" 35+. ' +&\$- , ) \*&' . \*\*\*L)-. ' 4\$, &&&. \*M`b" R)02+. \*+\*\$4. " 6. \*&' ( ' 6" 3\$4+&\$--l" +5"/540. " /&4%\*\* +5" 05' \*&6. 4"+&\$-4&\*7\*M`e" G+2. 4"L\$4&\$' +\*\*2\$L. " , . . ' &' +456)0. 6", l" ' \$+&5' \$-"0. ' +4\$- , \$' 7\*1" K2. ' " &'\*\*)&' (" 6&4. 0+&5' \*\*"/54")\*. " )' 6. 44&\*7"%\$' \$(. %. ' +3450. \*\* . \*\*+2. "h4\$^&&\$' "0. ' +4\$- , \$' 7")\*. 6"35K. 4\*\*6. 4&L. 6" /45%"h\$\* . -()&6\$' 0. "+5"4. Q)&. -\$4(. " , \$' 7\*\*+5"\$\*\* . \*\*\*+2. &4"&' 6&L&6)\$-. H35\*)4. \*\*+5">R\_4&\*7\*\*\$' 6"+2. " 35+. ' +&\$-&%3\$0+"5' ". Q)&+l"0\$3&+\$-M`\\`

<\*&' (" \*+4. \*\*P+. \*+\*\*0. ' \$4&5\*\*\$\*\*3-\$' ' &' (" . H. 40&\*. \*\* +2. 4. /54. " ' 5+"5' -l" 345L&6. \*\* +2. " &' \*+&+&5' \*\*\$' 6" 4. ()-\$+54\*\*+2. %\*. -L. \*\* K&+2"&' 6&0\$+&5' \*\*\$\*\*+5"+2. "45, ) \*+'. \*\*\*5/" +2. " /&' \$' 0&\$- \*l\*+. %J"&' \$-5"\$-5K\*\* 4. ()-\$+54\*\* +5" +&\$-54" 2l35+2. +&0\$- "0. ' \$4&5\*\* +5" %\$+02" 35+. ' +&\$- -\$4(. " 4. \$- " K&' (" &' " \$\*\* . + 34&0. \*J" &' 0-)6&' (" +25\*. " +2\$+" /&' \$' 0&\$-4&\*7"%56. --&' (" 6. . %) ' -&7. -lJ" l. + " K5)-6", . " 0\$+\$+4532&0"/&' 4. \$-&\*. 6M T%35\*&' (" 2&(2"2)46-. " 4\$+. \*\*&' " 0-&%\$+. " 4&\*7+. \*+\*\* K5)-6"4. 6)0. " +2. " 345/&+\$, &&+l" 5"/0\$4, 5' P4. -\$+. 6" &' L. \*+%. ' +\*\*3. ' \$-&\*. 6", l"\*)02". H. 40&\*. \*M`9\*\* K&+2"4. /54%\*\* +5"\$\*\* . +4&\*7PK. &(2+&' (J"6&\*0)\*\* . 6", -. 5KJ" &' 054354\$+&' ("\*)02"/\$0+54\*\*&' +5"+2. "\*\*+4. \*\*P+. \*+&' ("4. (&%. "K5)-6", . "\$' \$-5(5)\*\*+5"\$+\$H"5' "+2. "/) ' 6&' (" 5"/0-&%\$+. P6\$%\$(&' (" \$0+&L&+&. \*J"\$664. \*\*&' (" +2. "/-5K"5"/&' \$' 0. "+5K\$46\*\*\*)02"3450. 0+\*\*6&4. 0+ -lM`k`

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"a" ; M`9M>M` \_5562\$4+l" Vt" " 34&\$\* . " 5/" \*+4. \*\*\*+. \*+\*SJ" &' " XMVM 9' 6. 4\*5' " Y. 6M]"  
"Y=5' 65' 1"; . ' +4. "/54">05' 5%&0"c5-&0l"X. \*. \$402"=5' 65' J"Z[! \J]J"3M! b! M`  
`b"R. . "/54". H\$%3-. J"h\$' 7"5"/>' (-\$' 6J"R+4. \*\*\*#. \*+&' (J" , \$' 75/. ' (-\$' 6MD5M)7o\*+4. \*\*P+. \*+&' (M`  
`e"RM`h\$++ . ' J"XM`R5K. 4. )++\*J"\$' 6"BM#\$' \$7J"V=. +\$\*\*+\$-7"\$, 5)+2. "K. \$+2. 4l"#2. "&%3\$0+"5"/0-&%\$+. "02\$' ( ' 5' " 0. ' +4\$- , \$' 7\*\$"h\$' 7"5"/>' (-\$' 6"W547&' ("c\$3. 4"?5M`\[a]B\$I"Z[! \M`  
`\\X. Q)&. %. ' +\*\*"/54\*\*\*)02". L\$-)\$+&5' \*\*K. 4. " . \*+\$, -&\*2. 6", l"h\$\* . -; &40)-\$4aebk"K2&02"4. Q)&. \*\*"\$05%34. 2. ' \*&L. " \$\*\* . \*\*%. ' +5"/0\$3&+-\$6. Q)0l"5L. 4"\$5' . Pl. \$4"254&^5' "&' 0-)6&' (" "R. . "AM`9-. H\$' 6. 4J"VR+\$, &&+l"\$' 6\*\*)\*+\$&' \$, &&+l" &' , \$' 7&' ("4. /54%l"94. " . ' L&45' %. ' +\$-4&\*7\*\*%&\*&' (&' "h\$\* . -TTTq\$Y; TR="u"<?>c"NTJ"Z[! b]J"3M! fM`  
`k`8M; )--. ' J"V9/+ . 4"D=>\_1"><"h\$' 7"J"; -&%\$+. " ; 2\$' ( . "9, \$+. %. ' +\$' 6"#2. "c4. 0\$)+&5' \$4l"c4&' 0&3-. S"YZ[! f]J"Z["  
" \! M`

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T' "4. -\$+&5' "5"&' 6&L&6) \$- "&' \*+&+)+&5' \*J"+2. "3)435\*. "5/"0\$3&+-\$-4. ()-\$+&5' "&\*"+5"345+. 0"+2. "5-L. ' 01"5/"\$  
, \$' 7", I". ' \*)4&' ("2. 4. "&\*"\$-\$4(. " ' 5) (2"0\$3&+-\$-, )//. 4"+5"\$, \*54, "-5\*\*.. \*5' "&\*"\$\*\*.. +\*M#2. " ' +&4. "0\$3&+-\$-  
\$6. Q)\$01"4\$+&5"&\*") ' 6. 43&' ' . 6", I"\$\*\*I\*+. %"5/"\$\*\*.. +4&\*7PK. &(2+&' ("P"+2. "4&\*7&. 4"+2. "\$\*\*.. +5' "2. " , \$' 7S\*\*  
, 557\*J"+2. "%54. "0\$3&+-\$-+2. " , \$' 7" ' . 6\*\*"+5"/)' 6"&"K&+2M<sup>f</sup>#2. &4"45-. "&' "34& 0&3-. "&\*"' 5+"6. \*&(' . 6"+5"  
%&+&(\$+. "3-\$' . +\$4I", 5)' 6\$4I"4&\*7\*J"3\$4+&0)-\$4-I"\$+2. "I\*+. %&0"-L. -M<sup>b</sup>"D5K. L. 4J"\$%. ' 6&' (" , \$' 7"0\$3&+-\$-  
4. Q)\$4. %. ' +\*\*"+5")\$46"\$(\$&' \*+2. "3-\$' . +\$4I", 5)' 6\$4I"4&\*7\*\*K5)-6\*\*.. 4L. "\$6)\$-\$3)435\*. 1"+2. " , \$' 7&' ("  
\*I\*+. %"K5)-6", . "%54. "45, ) \*+5"35\*\*&, -. "-5\*\*.. \*\*+2\$' 7\*\*"+5"\$4. 6)0+&5' "&' ". H35\*)4. \*\*"+5\*\*)02"4&\*7\*\*"\$' 6"  
+2. "\$0+&L&+&. \*\*+\$4(. +. 6"K5)-6", . 05%. "%54. " . H3. ' \*&L. "+5"/)' 6M"

9\*\*/&' \$' 0&\$-\$\*\*+\$, &&+I"&\*"\$34. 4. Q)\$&+&. "/54\*\*)\*+\$&' \$, &&+IJ"0\$3&+-\$-4. Q)\$4. %. ' +\*\*%) \*+25K. L. 4"4. %\$&' "  
4&\*7P, \$\*. 6J" \$' 6"+2. " 6. /&' &+&5' " 5/"V(4. . ' S" 0-. \$4" \$' 6" 4. ()-\$+54P64&L. ' M<sup>f</sup>"c4. 3\$4\$+54I" K547"&' +5"+2. "  
/. \$\*&, &&+I"5/"-5K. 4&' ("0\$3&+-\$-4. Q)\$4. %. ' +\*\*\$(\$&' \*+0. 4+\$&' "V(4. . ' "\$\*\*.. +\*S"&\*"\$4. \$6I", . &' ("65' . "&' "+2. "  
><U<sup>k</sup>!"&\*&"0-\$&%. 6J"\*)02"4. Q)\$4. %. ' +\*\*\$4. " . H0. \*\*&L. -I"2&(2")' 6. 4"+2. "0)44. ' +"\$\*\*.. +4&\*7PK. &(2+&' ("  
4. (&%. M<sup>Z</sup>"D5K. L. 4J"+2. 4. "\$4. "+K5"/)' 6\$%. ' +\$-5, 0. 0+&5' \*\*"+5"+2&\*"\$3345\$02"+5"04. 6&+4&\*7M#2. "/&4\*+"&\*"  
+2\$+"V(4. . ' S"&' L. \*+%. ' +\*J"K2&\*+"3. 42\$3\*\*"%54. "6. \*&4\$, -. "/45%"\$3), -&0"35-&0I""\*+\$' 635&' +2\$"V' 5' P  
(4. . ' S"&' L. \*+%. ' +\*J"\$4. " ' 5"%54. "04. 6&+K54+2I"+2\$' " ' 5' P(4. . ' "\$\*\*.. +\*M<sup>a</sup>"#2. " . 05' 6"&\*"+2\$+"4. \* . \$402"  
&' 6&0\$+. \*\*"+2\$+"&' 0. ' +&L&\*&' (" -5\$' "54&(&' \$+&5' "&' "+2&\*"\$K\$1"K5)-6"3456)0. "%\$4(&' \$-4. \*)+\*U", \$' 7\*\*K&-"  
\*&%3-I"34&0. "-5\$' \*\*-. \*\*\*\$((4. \*\*&L. -I"&' "+2. " . L. ' +2\$+"0\$3&+-\$-4. Q)\$4. %. ' +\*\*\$4. "-5K. 4. 6M<sup>b</sup>"900546&' (-IJ"  
K. "K5)-6"4. L. 4\*. "+2. "0\$0-)\*M<sup>f</sup>X\$+2. 4"+2\$' "/50)\*&' ("5' "+2. "&' 0. ' +&L. P(. ' . 4\$+&5' " . // . 0\*\*"5/"V(4. . " "  
\*)3354+&' (" /\$0+54\*SJ" 0\$3&+-\$-4. Q)\$4. %. ' +\*\*5) (2+" +5"&' \*+. \$6", . ") \* . 6"+5"3. ' \$-&\*. " \*5P0\$--. 6"V, 45K' S"  
3450. 0+\*J"54"+25\* . "0\$44I&' ("2&(2P>R\_ "4&\*7M9\*\*\*" 5+. 6"&' "+2. "D=>\_"T' +. 4&%X. 354+1"

" v\$W" V, 45K' P3. ' \$-&\*&' (S" /\$0+54J" 4\$&\*&' (" 0\$3&+-\$-4. Q)\$4. %. ' +\*\* +5K\$46\*\*" \* . 0+54\*\*" K&+2" \*+45' ("  
" \*)+&\*&' \$, &&+I"4&\*7\*J"K5)-6" I&. -6"\$"05' \*+. --+\$&5' "&' "K2&02"4&\*7"\$' 6"35-&0I"05' \*&6. 4\$+&5' \*\* (5"&' "

"  
\\F" h\$\* .-; 5%%&+.. "5" "h\$' 7&' ("R)3. 4L&\*&5' J" h\$\* .-T<sup>f</sup>1"9)-5, \$-\$4. ()-\$+54I"/4\$%. K547"/54"%54. "4. \*&&. ' +, \$' 7\*\*  
\$' 6", \$' 7&' ("\*I\*+. %\*J"@. 0. %, . 4"Z[! ["Y4. L&\* . 6"8)' . "Z[! !]M<sup>f</sup>  
' "9-. H\$' 6. 4J"VR+\$, &&+I S<sup>M</sup>  
k["D=>\_"N&' \$-X. 354+J"3M\ fM<sup>f</sup>  
k!"8M<sup>f</sup>h4)' \*6. ' J"Vh4)\*\*. -\*-557\*\*\$+\$. \$\*&' (" , \$' 7"0\$3&+-\$-4)-. \*\*"+5\*\*3)4"(4. . ' "&' L. \*+%. ' +SJ" J!" ["  
8\$' )\$4I"Z[! fM<sup>f</sup>  
kZ">"D&(2P=. L. -\_45)3"5' (R)\*+\$&' \$, -. "N&' \$' 0. J"N&' \$' 0&' ("R)\*+\$&' \$, -. ">)453. \$' ">05' 5%11"1' +. 4&%X. 354+J8)-I"  
Z[! kJ"3M<sup>a</sup>ZM<sup>f</sup>  
ka"RM<sup>B</sup>\$+&7\$&' . ' J"V\_4. . ' "65. \*\*S+%"%. \$' "4&\*7P/4. . 1"K2I"K. \*\*25)-6", . "0\$)+&5)\*\*\$, 5)+"\$ (4. . "\*)3354+&' (" /\$0+54"&' "  
+2. "><SJ"! f"<sup>f</sup>@. 0. %, . 4"Z[! kJ=R>"\$' 6\_4\$'+2\$%X. \* . \$402"1' \*+&+). "5' "; -&%\$+. "; 2\$' (."\$' 6"+2. ">" L&5' %. ' +J"  
; 5%%. ' +\$4IJ"\$L&+&, -. "\$+1"KKK M<sup>f</sup>\*. M\$OM)7o\_4\$'+2\$%1' \*+&+). 0' . K\*o. )P(4. . ' P\*)3354+&' (P/\$0+54P, \$' 7P4&\*7M<sup>f</sup>  
kb"9-. H\$' 6. 4J"VR+\$, &&+I S<sup>M</sup>

!e"

"



" +2. "\$%. "6&4. 0+&5' "v\$\*\*4. K\$46& ('(4. . ' "3450. 0+\*wM B54. 5L. 4J&+"K5)-6" , . "%54. "/50) \* . 6"\$' 6"  
" . \$\*&. 4"+5"4\$+&5' \$-&\*. "\$\*\*0\$3+)4&' ("2. "4&\*7"5"/\*\*")66. ' "L\$-). "-5\*\* . \*\*6). ".+5"v\*+4\$' 6. 6"\$\*\* . +\*SMKe"

; 5' \*+4)0+&' ("% . +2565-5(&. \*\*/54"%56. --&' ("2. \* . "4&\*7\*\*&5)+\*&6. "2. \*\*053. "5/"2&\*02\$3+. 4J"\$+25) (2"&"  
&\* "K54+2" ' 5+&' ("2\$+"34)6. ' +&\$-"/&' \$' 0&\$-"4. ()-\$+&5' "\*)02"\$\*\*0\$3&+\$-"4. ()-\$+&5' "2\$\*\*"v34. 0\$)+&5' \$4I"  
%5+&L. S"&%3-I&' ("2\$+"K2. ' "-. L. -\*\*5"/)"0. 4+\$&' +I"\$4. "2&(2J&' \*+&+)+&5' \*\*5) (2+"5"&' 04. \$\* . "2. &4"0\$3&+\$-"  
+5")\$46"\$(\$&' \*+5\*\* . \*\*/45%"&' 6. +. 4%&' \$+. "/&' \$' 0&\$-"4&\*7\*M^"

#2. 4. "&\*"\$ (4. \$+"6. \$-"5"/4. 0. ' +-&+. 4\$+)4. "5" "+2. "+53&0"5"/+2. "-&' 7\*\* , . +K. . ' "/&' \$' 0&\$-"\$' 6">R\_ "4&\*7J"  
3\$4+&0)-\$4-I"0-&%\$+. "4&\*7M N5\*\*&P/). -"05%3\$' &. \*\*6. 4&L. "2) (."L5-)%. \*\*5"//) ' 6&' ("L&\$" , \$' 7\*U" , . +K. . ' "  
Z[[b"\$' 6"Z[! bJ"+2. "K54-6\$\*\*Ze"-\$4(. \*+"05%%. 40&\$-\$" , \$' 7\*\*02\$' ' . --. 6"\$+-\$- . \$\*+j ! MFe"+4&-&5' "+5"+2. "+53"  
/5\*\*&" /). -" &' 6)\*+4&. \*J" 05%3\$4. 6" K&+2" 0)\*+j ! k!" , &-&5' " +5" 4. ' . K\$ , - . ' . 4(I M^k" B. 02\$' &\*%\*" /54"  
&' +456)0&' ("\* , \*+\$' +&\$- , 45K' "3. ' \$-&\*&' ("/0+54\*\*"\$3\$4+&\$-"5-)+&5' "+5"0544. 0+&' ("2. \* . "&% , \$-\$' 0. \*\*  
5) (2+"2. 4. /54. "+5" , . H3-54. 6M9"+2. "%045P-. L. -J) , \$' 7\*\$-\$4(. . H35\*)4. "-&%&+\*05)-6"\$-\$5" , . "4. 6)0. 6M"  
R)02"-&%&+\*\*\$4. "&%35\* . 6"+5"3-\$0. "\$0\$3"5" . &+2. 4\*\*&' (-. "05)' +. 43\$4+&. \*\*54"0-5\* . "(45)3\*\*5"/05)' +. 43\$4+&. \*\*  
4. -\$+&L. " +5" , \$' 7\*\$"0\$3&+\$-J" &' 0-)6&' ("\* . 0+54\$-"05' 0. ' +4\$+&5' \*M^f" ; \$33&' (" , \$' 7\*\$" . H35\*)4. "+5"0\$4 , 5' P  
4. -\$+ . 6"\$\*\* . +\*J" 54" . H35\*)4. \*\*\*) , 0. 0+" +5" . -. L\$+ . 6" . ' L45' % . ' +\$- "4&\*7"J" K5)-6" , . "5' . " % . +256" 5/"  
4. 6)0&' (" , \$' 7"/)' 6&' ("5"/\*\*)02"&' 6)\*+4&. \*J"K2&+\*+"05%%. ' \*)4\$+ . -I" . ' \*)4&' ("(4. \$+ . 4\*\*I\*+ . %&0"4. \*&-&' 0. M"  
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9"/)4+2. 4"\$+ . 4" \$+&L. " K5)-6" , . "+5"+\$4(. + "%5' . +\$4I" 35-&0I"\$+\*)3354+&' ("0-&%\$+. P/4&. ' 6-I" 3450. 0+\*M"  
c\$4+&0)-\$4-I"\*&' 0. "2. "/&' \$' 0&\$-"04&\*&J"0. ' +4\$- , \$' 7\*\*2\$L. "3)4\*) . 6"%\$' I"345(4\$%%. \*\*+5"\$02&L. "2&\*"  
\$&%J" &' 0-)6&' (" )+4\$P-55\* . "%5' . +\$4I" 35-&0&. \*\*\*)02"\$\*\*Q)\$' +&+&L. " . \$\*&' ("Yn>J)"\$' 6' (. ' . 45)\*\*-&Q)&6&+I"  
345L&\*&5' "+5"+2. " , \$' 7&' ("\*I\*+ . %M#2. \*\*0\$- . "5"/\*\*5%. "5"/+2. \* . "345(4\$%%. \*\*&\*%&% . ' \* . U"n>53. 4\$+&5' \*\*  
\*&' 0. " Z[[f" 2\$L. " 05' +4& , )+ . 6" +5" \$((4. (\$+ . " (-5, \$- 0. ' +4\$- , \$' 7" , \$-\$' 0. " \*2. . + . H3\$' \*&5' " 5/"  
\$3345H&%\$+. -I"j ! [Me"+4&-&5' k'"\$' 6"0. ' +4\$- , \$' 7\*\* 5K"25-6\*\*&' (&/&0\$' +L5-)%. \*\*5"/ , 5' 6\*\*/45% , 5+2"+2. "  
3) , -&0"\$' 6"34&L\$+. \*\* . 0+54\*\*5' "+2. &4" , \$-\$' 0. \*\*2. . +\*M"

"  
ke"D=>\_"T' +. 4&% "X. 354+J"3Ma! M"  
k\^NMd\$- . ' 0&\$J" h\$' 7"; \$3&+\$-\$" \$' 6"<' 0. 4+\$&' +IJ" TBN"W547&' ("c\$3. 4"Wco! [oZ[f]R. 3+ . % , . 4"Z[! [J"3Ma"  
kk"N\$4"N&' \$' 0. "\_)&6. J"<' 6. 4%&' &' ("5)4"/)+4. 1"9\*\*+)6I"5/" , \$' 7\*\$&' L. \*+% . ' +\*\*&' \*\* . - . 0+ . 6"05%3\$' &. \*\*  
\$++4& , )+\$ , - . "+5"/5\*\*&"/) . -\*\*"\$' 6"4. ' . K\$ , - . ' . 4(I"YZ' 6"?5L. % , . 4"Z[! e]"3M&LM"  
kf^h\$' 7"/54" T' +. 4' \$+&5' \$-R. ++. % . ' +\*J"#2. "+4. \$+% . ' +5"/-\$4(. . H35\*)4. \*\*&' +2. "h\$\* . -"0\$3&+\$- \*\*+\$' 6\$46\*J"a["934&"  
Z[! fM"  
k^"9M\_MD\$-6\$' . J"BMX5 , . 4+\*PR7-\$4J"#MW&. -\$6. 7"\$' 6"; M: 5)' (J^Yn>1\*\*+2. \*\*+54I\*\*5"/\$4SJ" h\$' 7"5"/>' (-\$' 6"R+//^W547&' ("  
c\$3. 4"?5M\ZbJ"G0+5 , . 4"Z[! \M9\*\*%\$--"345354+&5' "5"/+2. \* . "n>53. 4\$+&5' \*\*\$4. "34. \* . ' +I" , . &' (")' K5)' 6M"

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#2. "0\$-. "5/"02"&' +. 4L. ' +&5' \*4\$&\*. \*\*+2. "Q). \*+&5' "5/"K2. +2. 4"+2. \*. "0. ' +4\$-. , \$' 7"&' &+&\$+&L. \*\*5) (2+"5"  
, . ") \* . 6"+5"345%5+. "3\$4+&0)-\$4"/54%\*"5/"-. ' 6&' (M'T' "+2. "05' +. H+"5/" +2&\*"02\$3+. 4J"+2&\*/54%"5/"-. ' 6&' ("  
' \$+)4\$--I"K5)-6", . "4. -\$+. 6"+5\*\*)\*+\$&' \$, -. "&' L. \*+%. ' +M'G' . "K\$1"+5". ' 05)4\$ (. , \$' 7\*\*+5"&' L. \*+"%54. "&' "  
(4. . ' "\$\*\*.\*+\*K5)-6", . "+5"+4. \$+"0. 4+\$&' " (4. . ' "\$\*\*.\*+\*\$. -&(&, -. "/54%"5' . +\$41"35-&01"345(4\$%%. \*\*\*)02"  
\$\*\*n>M["9\*\*" 5+. 6", I"47\$K\$&"n>"05)-6", . ") \* . 6"\$\*\*\$"% . 02\$' &\*"5"7&07\*+\$4+"&' L. \*+%. ' +\*\*&' " (4. . ' "  
&' /4\$\*+4)0+4. J", I"\$%. ' 6&' (" +2. "025&0. "5/"\$\*\*.\*+\*, 5) (2+", I"0. ' +4\$-, \$' 7\*\*&' "%5' . +\$41"35-&01"K2&02J"  
2. \*\*) ((. \*+J"&\*\*\* 5+0)44. ' +I"V\*. 0+54" . )+\$-M["94()\$ , -IJ"+2&\*&\*\$--2. "%54. "34. \*\*&' ("05' \*&6. 4&' (" +2\$+ "  
05' L. ' +&5' \$-n>"53. 4\$+&5' \*\* 2\$L. "+. ' 6. 6"+5" /\$L5)4" 2&(2P0\$4, 5' "\$\*\*.\*+\*/54"&' L. \*+%. ' +3)435\*. \*M'  
900546&' (" +5"\$\*\*+)6I", I"+2. "=R>"5/" +2. "<A"\$' 6">)45^5' . J". H&\*+&' ("n>"35-&0&. \*\* . H2&, &+"\$V2&(2P0\$4, 5' "  
\*7. K\$K2&02"05)-6"2\$L. "\$-5' (" +. 4%"&%3\$0+"5' ". ' L&45' %. ' +\$-\*) \*+\$&' \$, &+IM'900546&' (" +5"+2. \*\*+)6IJ "  
+2. , )-7"5/" +2. \*. "3)402\$\*. \*\*2\$L. , . . "%\$6. &' +2. "+K5%5\*+0\$4, 5' P&' +. ' \*&L. \*\*. 0+54\*\*5/" +2. ". 05' 5%1I "  
)&+&\*. \*\*\$' 6"%\$' )/\$0+)4&' (M["B54. 5L. 4J"&' "+2. ">)45^5' . J"/54". H\$%3-. J"9hR"05%34&\*. 6"5/"\$)+5"-5\$' \*\*  
\$4. . -&(&, -. "05--\$+. 4\$-)" 6. 4"+2. ">; h"n>"4\$%. K547M["a\*\*

I+\*\* . . %\*\*0)4&5)\*\*+2\$+"(5L. 4' %. ' +P\*35' \*54. 6"345(4\$%%. \*\*\*)02"\$\*\*n>J"K2&02"\$4. "6. \*&' ( ' . 6" "  
+5"7. . 3"+2. , \$' 7&' ("\*I\*+. %"- . ' 6&' (J"%&(2+", . ") \* . 6"+5")3354+&' L. \*+%. ' +&' &' &' 6)\*+4&. \*\*+2\$+"\$4. "  
+2. %\*. -L. \*\* 0\$4, 5' P&' +. ' \*&L. J" '\$' 6' )' 6. 4%&' . " (5L. 4' %. ' +\$4(. +\*\* . \*. K2. 4. M' T6. ' +&I&' (" '\$' 6 "  
4. %. 6I&' (" +2. \*. , &\$\*. \*J"&\*\*\*5' . "5/" +2. "%5\*+"05' 04. +. \*\*254+P+. 4%"%. \$\*)4. \*\*+5+\$7. M'T' "/\$0+J"\$00546&' ("  
+5"+2. "\_4\$'+2\$%\*\*+)6IJ" 5"\$\*\*.\*+\*4. -\$+&' (" +5"4. ' . K\$, -. ' . ' 4(I"05%3\$' &. \*\*K. 4. ") \* . 6". &+2. 4"&' "+2. "n>"  
345(4\$%%. \*\*5/" . &+2. 4"+2. ">; h"54"+2. "h\$' 7"5/">' (-\$' 6J" I. +5&+"\$' 6' (\$\*\*05%3\$' &. \*\$", 5' 6\*\*05%34&\*. 6 "  
fMb"3. 40. ' +\$' 6"! M["3. 40. ' +J"4. \*3. 0+&L. -IM["#2. "\$0\$6. %&0-&+. 4\$+)4. \*\*) ((. \*+\*\*+2\$+" +2. "&%3\$0+"5/"n>"  
3)402\$\*. \*\*3\$\*\*\*+245) (2"&%3. 4/. 0+I"+5"5+2. 4"\$\*\*.\*+\*0-\$\*\*.\*+\*\$' 6"+2. "-\$4(. 4". 05' 5%1I"+2. 4. "&\*. L&6. ' 0. "  
5/"\$6&\*345354+&5' \$+. "0)%3&' +2. "34&0. "5/" . -&(&, -. "\$\*\*.\*+\*\$+/+. 4"+2. "&' +456)0+&5' "5/" +2. \*. "054354\$+. , 5' 6 "  
3)402\$\*. "345(4\$%%. \*M#2. \*. "/\$0+54\*\*\$-5' . \*\*. . %&' 05' \*&+. ' +K&+2"+2. "5L. 4\$402&' ("&%\*\*5/">)453. '\$' "  
\$' 6' <A" 35-&01%\$7&' ("5' "+2. . ' L&45' %. ' +M'9"4. L&. K"5/" +2. "05--\$+. 4\$-/4\$%. K547"/54"0. ' +4\$-, \$' 7 "

f["9\*\*" 5+. 6", I"; 2\$&' "X. \$0+&5' 1"V#2. "v0. ' +4\$-, \$' 7w0\$' ") \* . "%5' . +\$41"35-&01"+5"04. \$+. "&' 0. ' +&L. \*\*/54"05%%. 40&\$- "  
, \$' 7\*\*+5"- . ' 6"%54. "+5\*\*)\*+\$&' \$, -. "&' 6)\*+4&. \*\*54", )&' . \*\* . \*\* , I"%\$7&' ("02. \$3. 4"4. /&' \$' 0&' ("53+&5' \*\*\$L&\$-, -. "/54 "  
, \$' 7\*\*+2\$+"-. ' 6\*\*)\*+\$&' \$, -IJ"\$' 6054", I"\$00. 3+&' ("\*\*.\*+\*\*\*)02"\$\*\* (4. . ' , 5' 6\*\*\$\*\*05--\$+. 4\$-/54"0. ' +4\$-, \$' 7 "  
, 5445K&' (MM\$R. "hMA). 33. 4J"#M'R+. &' K. (" '\$' 6'\_M#25)%&VR)\*+\$&' \$, -. "h\$' 7&' ("T' &+&\$+&L. \*1X. ()-\$+54\*\$X5-. "&' "  
D\$+&' ("@. /54. \*+\$+&5' SJ"; 2\$&' "X. \$0+&5' "X. \*. \$402J8)-I"Z[! kJ"3M'aM "  
f1"9M'h\$47\$K&WV21"%5' . +\$41"35-&01"\*25)-6"(5"(4. . ' SJ" J"! f"B\$1"Z[! kM "  
f2"RM'B\$+&7\$&' . ' J">M'; %\$3&(-&5"\$' 6'@M't. ' (2. -&J"V#2. "0-&%\$+. "&%3\$0+"5"/Q)\$' +&+&+&L. . \$&' &' (SJ\_4\$'+2\$%\$X. \*. \$402 "  
T' \*+&)+. "5" ; -&%\$+. ; 2\$' (" '\$' 6"+2. ">" L&45' %. ' +c5-&01"c\$3. 4J"B\$1"Z[! kM#2. &4"0\$0)-\$+&5' \*\*&' 6&0\$+. "+2\$+"ZM' r "  
5"/>; h"054354\$+. , 5' 6"3)402\$\*. \*\*+\$7. "3-\$0. "&' +2. \*\*. 0+54\*\*5/"%\$' )/\$0+)4&' (" '\$' 6". - . 0+&0&+I" '\$' 6' (\$\*\*3456)0+&5' J "  
K2&02"\$-5' . "\$4. "4. \*35' \*&, -. "/54"eFler"5"/>)45^5' . "\$4. \$ (4. . ' 25)\* . ("\$. %&\*\*\*&5' \*J, )+5' -I" f'r"5/"(45\*\*L\$-). "  
\$66. 6"Y\_d9]MN54+2. "h\$' 7"5/">' (-\$' 6J"%\$' )/\$0+)4&' (" '\$' 6". - . 0+&0&+I"3456)0+&5' "g"4. \*35' \*&, -. "/54"eZr"5/"<A "  
. %&\*\*\*&5' \*g"%\$7. " )3"b' MZr"5"/+2. . -&(&, -. , . ' 02%\$47J, )+5' -I"! Mfr"5/"\_d9M "  
fa"1" 6. . 6J"+2. ">; n"2\$\*\*3)402\$\*. 6"9hR"05%34&\*. 6"5/"-5\$' \*\*/54"+2. "3)402\$\*. "5"/d5-7\*K\$ (. ' "0\$4\*MR. . "9M'h\$47. 4J "  
V>; h\*\*)\*3. ' 6\*\*3)402\$\*. "5/"-5\$' \*\* , \$07. 6", I"dW"\$\*\*.\*+\*SJ J"Zk"R. 3+. %, . 4"Z[! eM "  
fb" B\$+&7\$&' . ' J'; %\$3&(-&5"\$' 6't. ' (2. -&J"V#2. "0-&%\$+. "&%3\$0+SM"

-. ' 6&' ("\*02. %. \*\*'\$' 6"2\$&40)+\*\*25)-6"+2. 4. /54. "345L&6. "\$"+\$4&' ("35&' +J"K&+2"+2. "\$&%"5/"34&54&+&' ("&' L. \*+%. ' +&' "-5KP>R\_P4&\*7"\$\*\*+. \*M

"

## 5. Conclusion

T' "+2&\*02\$3+. 4" K. "2\$L. ". H\$%&' . 6"+2. "%56. 4' "4&\*7"%\$' \$(. %. ' +3\$4\$6&(%J"K2&02". %32\$\*&\*. \*\*+2. "0\$3\$0&+I"5/"&' L. \*+54\*\*"\$' 6", . ' . /&0&\$4&. \*\*+5". L\$-)\$+. "4&\*7"\$' 6"%\$7. "%. \$' &' (/)-"\$' 6". //&0&. ' +&' L. \*+%. ' +025&0. \*J"345L&6. 6"+2. I"\$4. " (4\$' +. 6"/)--&' /54%\$+&5' "\$' 6"+2. "&' L. \*+%. ' +02\$&' \*\*+2. I"\*), \*&+"&' "\$4. "3453. 4-I" (5L. 4' . 6MT' "+2. "0\$\*. "5/"%56. 4' "/&' \$' 0&\$-"%\$47. +\*\*25K. L. 4" g"\$' 6"\*3. 0&/&0\$--I"&' 4. -\$+&5' "+5"+2. "05%3-. H&+&. \*\*&' 2. 4. ' +&' "+2. "02\$--. ' ( . "5/"0-&%\$+. "02\$' ( . "g"K. "4. %\$&' ")' 05' L&' 0. 6"+2\$+"\*)02"34&' 0&3-. \*\*25-6"%%)02"K\$+. 4U"&' "/\$0+J"+2. I"%\$I", . "05)' +. 43456)0+&L. " , . 0\$)\*. "+2. I"3. 43. +)\$+. "+2. "/\${\$6. "+2\$+"4&\*7"%\$' \$(. %. ' +. 02' &Q). \*\*%\$I", . ")\*. 6"+5"\$664. \*\*+2. ". H+. 4' \$-&+&. \*\*04. \$+. 6", I"%\$47. +\$0+&L&+&. \*M' T' "+2. "-&(2+"5/" +2. \*. "5, \*. 4L\$+&5' \*J" K. "2\$L. "0\$' L\$\*\*. 6"\*5%. "35\*\*&, -. "4. %. 6&. \*M' R)02"% . 02\$' &\*&\*\$4. "\*\*+45' (. 4"\$' 6"%54. "6&4. 0+ /54%\*\*5/"&' +. 4L. ' +&5' "+2\$' "0)44. ' +I"05' \*&6. 4. 6"&' "%5\*+"0)4&\*6&0+&5' \*J"\$-+25) (2"345(4. \*\*&\*\*\*-5K-I", . &' ("%6. MT' "5)4"L&. KJ"+2. ". L\$-)\$+&5' "5/"\*)02"4. /54%\*\*&\*" %\$6. ". L. 4"%54. "34. \*\*&' (, I"+2. "35+. ' +&\$- /54/)+)4. "44. L. 4\*&, -. "\$' 6"0\$+\$+4532&0"6\$%\$(. \*M

"